

0938-LP-018-0010

HEATING, VENTILATION AND AIR CONDITIONING DESIGN CRITERIA MANUAL FOR SURFACE SHIPS OF THE UNITED STATES NAVY



THIS DOCUMENT IS SUBJECT TO SPECIAL EXPORT CONTROLS AND EACH TRANSMITTAL TO FOREIGN GOVERNMENTS OR FOREIGN NATIONALS MAY BE MADE ONLY WITH PRIOR APPROVAL OF THE COMMANDER, NAVAL SHIP SYSTEMS COMMAND, WASHINGTON, D.C. 20360.

DISTRIBUTION STATEMENT B: DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES ONLY; ADMINISTRATIVE/ OPERATIONAL USE; DATE OF PUBLICATION. OTHER REQUESTS FOR THIS DOCUMENT MUST BE REFERRED TO THE NAVAL SEA SYSTEMS COMMAND (SEA-0982).

WARNING: THIS DOCUMENT CONTAINS TECHNICAL DATA WHOSE EXPORT IS RESTRICTED BY THE ARMS EXPORT CONTROL ACT (TITLE 22, U.S.C. SEC. 2751 ET. SEQ.) OR EXECUTIVE ORDER 12470. VIOLATIONS OF THESE EXPORT LAWS ARE SUBJECT TO SEVERE CRIMINAL PENALTIES.

DESTRUCTION NOTICE: DESTROY BY ANY METHOD THAT WILL PREVENT DISCLOSURE OF CONTENTS OR RECONSTRUCTION OF THE DOCUMENT.

PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND

29 MARCH 1991

0938LP0180010





100

NAVSEA TECHNICAL MANUAL CERTIFICATION SHEET

1 of 1

Certification Applies to: New Manual ☐ Revision ☒ Change ☐

Applicable TMINS/Pub. No. 0938-LP-018-0010

Publication Date (Mo, Da, Yr) MARCH 29, 1991

Title: Heating, Ventilation and Air Conditioning Design Criteria Manual for Surface Ships of the United States Navy

TMCR/TMSR/Specification No.:

CHANGES AND REVISIONS:

Purpose: The HVAC Design Criteria Manual (DCM) of 1 July 1969 is superseded by the HVAC Design Criteria Manual (DCM) of 29 March 1991. This revision results from the Naval Sea Systems Command's program to revise, repackage, and reissue the manual.

Equipment Alteration Numbers Incorporated: N/A

TMDER/ACN Numbers Incorporated: N/A

Continue on reverse side or add pages as needed.

CERTIFICATION STATEMENT

This is to certify that responsible NAVSEA activities have reviewed the above identified document for acquisition compliance, technical coverage, and printing quality. This form is for internal NAVSEA management use only, and does not imply contractual approval or acceptance of the technical manual by the Government, nor relieve the contractor of any responsibility for delivering the technical manual in accordance with the contract requirement.

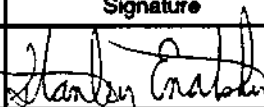
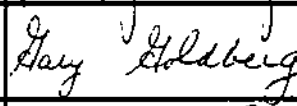

Authority	Name	Signature	Organization	Code	Date
Acquisition	Stan Enatsky		Naval Sea Systems Command	56Y12	3/29/91
Technical	Gary Goldberg		Naval Sea Systems Command	56Y12	3/29/91
Printing Release	Gregory Burns		Naval Sea Data Support Activity	5H31	3/20/91

TABLE OF CONTENTS

DETAIL REQUIREMENTS (Design Criteria Sheets)

Design Criteria Sheet Explanation.....	1-1
Main Machinery Spaces.....	2-1
Secondary Machinery Spaces.....	3-1
Shops (Excluding Weapons Shops).....	4-1
Communications, Control and Electronic Spaces.....	5-1
Berthing, Messing, Office, and Public Spaces.....	6-1
Washroom and Locker Room Facilities.....	7-1
Commisary Spaces.....	8-1
Medical and Dental Spaces.....	9-1
Photographic (Excluding X-ray Spaces), Printing and Reproduction, and Motion Picture Spaces.....	10-1
Gasoline Spaces.....	11-1
Miscellaneous Spaces.....	12-1
Stowage Spaces (Excluding Nuclear, Photographic, Medical, Dental, Gasoline, Catapult and Weapons).....	13-1
Catapult Spaces.....	14-1
Ammunition Spaces (Excluding FBM Spaces).....	15-1
FBM Spaces.....	16-1
Airborne Systems Support Center Spaces and Integrated Operational Intelligence Spaces.....	17-1
Main Index of Spaces.....	18-1

LIST OF FIGURES

Exhaust Terminal and Typical Duct Arrangement for	
Welding Slab.....	4-26
Exhaust Hood for Laundry Press.....	4-27
Nylon Bag Lint Trap.....	4-28
Air Conditioning - Crew Living Space.....	6-5
Ventilation - Catapult Trough.....	14-11
Ventilation - Catapult Trough.....	14-12
Ventilation - Catapult Spaces.....	14-13
Ventilation - Typical Blow-out Arrangement	
for Magazine Spaces.....	15-21

1. Design criteria sheet explanation

These sheets contain data and requirements to be followed in the design of air conditioning, ventilation and heating systems serving spaces to which these sheets are applicable. Where multiple functions are combined in a single space, the design of that space shall be such that the design criteria for all the component functions are met or bettered. The symbol "----" is used on the design criteria sheets where there is no criteria specified. If the space has special requirements, then a reference to the Special Requirements Section will be shown. The following is an explanation of the design criteria items enumerated on the Design Criteria Sheets (item numbers correspond to those on the Design Criteria Sheets).

The actual design practices for surface ships are contained in Chapter 510 of the NAVSEA Design Practices Manual (reference 1).

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category:

Insulation category designation refers to categories described in Section 635 of the General Specifications. These categories define the thickness and extent of insulation required for compartment boundaries.

1.2 HVAC Treatment:

- a. Supply Air**
- b. Exhaust/Return Air**

Space treatment required (A/C, Vent., Blowout (B.O.)) is indicated by the notation of certain system requirements (a, b, c, d) under the applicable type of system. The following designations listed under the applicable system(s) indicate the type of supply and exhaust (or return for air conditioning systems) to be provided these space(s):

- M = Mechanical (fan)**
- N = Natural**
- NM = Natural or Mechanical**
- M/N = Combination of Mechanical and Natural**

- c. System Classification**
- d. Closure Classification**

System Classification - Required damage control classification of applicable system(s). If a "Z" classification is indicated, and a "Z" system is not readily available, consideration should be given to serving the space from a "W" or "Circle W" system (as applicable) if simplification of system arrangements can be attained. The Circle W damage control classification will be referred to throughout this manual as "(W)".

Closure Classification - Required damage control classification of closures in applicable system(s) serving these spaces.

Required damage control classification listed in design criteria sheets apply when spaces are outside of the CPS envelope. If spaces are included in the CPS envelope, the required damage control classification should be "W" for those spaces identified as (W). Spaces identified as "Z" will not change classification.

All fans and closures require a damage control classification as follows:

<u>Classification</u>	<u>Operation</u>
W	Fan operating or closure open under all conditions of ship operation (secured and closed respectively only to prevent the spread of damage).
(W)	Fan secured or closure closed only during CBR warfare and to prevent the spread of damage.
Z	Fan normally operating and closure normally open but secured and closed respectively during General Quarters.
(Z)	Fan normally operating and closure normally open but secured and closed respectively during General Quarters. Fan may be operated and closure opened during prolonged periods of General Quarters by permission of the Commanding Officer through the OOD for the health and comfort of the crew.
Y	Fan normally secured and closure normally closed. Fan is operated and closure opened only when the space served is in use or a piece of equipment requiring ventilation is in operation.
X	Fan normally secured and closure normally closed. Fan is operated and closure opened only when the damage control officer authorizes blowout of the space served by the fan and closure.
(X)	Fan normally secured and closure normally closed. Fan may be operated and closure opened by personnel during General Quarters without special permission proceeding to battle stations or as required in routine inspection checks.

1.3 Air Quality:

a. Design Temperature:

Design temperature indicates the maximum cooling season temperature and minimum heating season temperature allowable under design weather temperatures, unless otherwise noted. The symbol "P" under heating season column indicates that only preheated air is required. Whether these temperatures are to be maintained by air conditioning or ventilation systems is indicated in item 1.2.

b. Design Relative Humidity:

Design relative humidity indicates maximum allowable percentage of relative humidity, unless specific tolerances are otherwise noted. Relative humidity reduction shall be accomplished in the applicable space(s) by the air conditioning and/or the heating system.

c. Assumed Temperature:

Assumed temperatures are listed for those spaces ventilated on an other than temperature rise basis. The assumed temperature listed is to be used in calculating transmission loads to or from adjacent spaces. If spaces with assumed temperatures are; (a) subjected to significant weather loading, (b) adjacent to high temperature spaces, or (c) have unusually high equipment loads, a heat balance shall be accomplished to more accurately determine ambient conditions prior to calculating a transmission load.

1.4 Air Quantity:

a. Rate of Change (min):

Rate of change indicates a requirement for ventilation at a rate sufficient to ensure one complete air change in the time (in minutes) indicated.

b. Supply:

Indicates how the quantity of supply air is determined.

c. Exhaust/Return:

Indicates how the quantity of exhaust or return air is determined.

1.5 Air Distribution/Circulation:

Indicates requirements for supply, return, or exhaust air distribution/circulation.

1.6 Air Pressurization:

Differential pressure to be maintained relative to surrounding spaces in inches of water (gauge).

2.0 APPLICABLE SPACES:

Listed criteria is applicable to these spaces. Lighting foot-candle requirements and space noise category designations (noise categories described in Section 073 of the General Specifications) are designated respectively after space name. Compartment heat gains as a result of lighting foot-candle requirements is described in Section II, Paragraph 3.5, Chapter 510 of the Design Practices Manual (reference 1).

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

Requirements which apply to all spaces listed in 2.0.

3.X Applicable only to:

Requirements which apply only to spaces listed in 3.X.

GENERAL NOTES

The following notes apply to all space criteria and shall be considered in use and interpretation of the criteria contained in this manual.

1. The quantity of supply air shall equal the quantity of exhaust air, unless stated otherwise.
2. The design differential air pressure of spaces within a Collective Protection System (CPS) zone are 2 inches W.G. higher than the pressure shown, unless stated otherwise.
3. The design of all hoods (e.g. exhaust, backdraft), unless states otherwise, shall be in accordance with the latest edition of "Industrial Ventilation - A Manual of Recommended Practice" by the Committee on Industrial Ventilation, P.O. Box 16153, Lansing, Michigan, 48901. Copies may be purchased from the American Conference of Governmental Industrial Hygienists, 6500 Glenway, Bldg. D-7, Cincinnati, Ohio, 45211.
4. Exhaust air which is required to be discharged directly to the weather refers only to the physical location of the exhaust system's discharge point. Exhaust to areas such as uptakes and voids is prohibited. It does not require an independent exhaust system, nor does it require an absence of exhaust terminals downstream of the space.
5. Navy Standard air filter requirements refer to MIL-F-16552, Filters, Air Environmental Control System, Cleanable, Impingement (High Velocity Type).
6. HVAC equipment is fully described in the Heating, Ventilating, and Air Conditioning Equipment Manual (reference 2). This manual provides a single source which describes and depicts the various Navy standard equipment and fittings employed in ship HVAC systems.
7. In all cases, 75 CFM shall be the minimum terminal air flow requirement.
8. The ventilation supply quantity to prevent the formulation of an explosive mixture is obtained from Naval Ships Technical Manual Chapter 313.

REFERENCES

1. NAVSEA Design Practices and Criteria Manual for Air Conditioning, Ventilation and Heating of Surface Ships, Chapter 510, NAVSEA T9500-AA-PRO-1302.
2. Heating, Ventilating, and Air Conditioning Equipment Manual, NAVSEA 9512-BS-MMA-010
3. Naval Ships Technical Manual, Chapter 313
4. Industrial Ventilation - A Manual of Recommended Practice by the Committee on Industrial Ventilation, P.O. Box 16153, Lansing, Michigan, 48901.

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

Preface to Design Criteria - Group 2
Main Machinery Spaces

Main machinery spaces are normally ventilated to prevent excessively high space temperatures that could cause ship's personnel to experience heat stress and cause equipment failures. It is usually not practical to air condition these spaces (except for Enclosed Operating Stations). These spaces may be air conditioned if included in a CPS zone.

APPLICABLE SPACES - GROUP 2

Compartment Name	Sheet No.
Access Trunk (Main Machinery Spaces)	2C
Auxiliary Machinery Room	2C
Auxiliary Machinery and Deballasting Compressor Rm	2C
Combustion Air Intake Space (Uptake)	2B
Cycloidal Propeller Room	2F
Diesel Fire Pump Room	2C
Emergency Generator Room	2C
Enclosed Operating Station	2A
Engine Room	2C
Engine Room Intake	2B
Evaporator Room	2C
Fire Pump Room	2C
Fire Room	2C
Forced Draft Blower Room	2D
Fuel Oil Service Pump Enclosure (Machinery Room)	2D
Main Machinery Room (diesel and steam powered)	2C
Main Machinery Room (gas turbine powered)	2E
Uptake Space	2B

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NH	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	80°F	---
b. Design Relative Humidity:	55%	65°F
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply:
Replenishment air shall be taken from Machinery Space supply system.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Enclosed Operating Station 21 E

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) Air conditioning system shall be independent.
- b) Heating system shall assume all equipment is secured. Heat shall be provided using convection heater.
- c) Replenishment air exhaust may be natural to the Machinery Room.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:**

Insulation categories shall be in accordance with General Specification 635 requirements for spaces at temperatures estimated.

1.2 HVAC Treatment:

These spaces are not ventilated.

	A/C	VENT	BO
a. Supply Air	---	---	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
Combustion Air Intake Space (Uptake)	---	---
Engine Room Intake	---	---
Uptake Space	---	---

Criteria Sheet No: 2C

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: A

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	See 3.0
b. Design Relative Humidity:	---	---
c. Assumed Temperature:		
(cooling season)	120°F 130°F 140°F	
	lower middle upper	
(heating season)	40°F (all levels)	
	See 3.0	

1.4 Air Quantity:

1. Supply air quantities for main and auxiliary machinery spaces shall be based on the summation of CFM allowances for each piece of equipment within the spaces, as listed below, with the exceptions noted below. Each turbine or boiler shall be calculated separately. Exceptions are the fire rooms, which shall receive a two-minute rate of change if this results in an air quantity larger than that obtained through the CFM allowance method, and the Main Machinery Room, which shall have a one minute maximum rate of change.

Propulsion Steam Turbines

$$CFM=1.4 \times (SHP/TURBINES)^{2/3} (DISPLACEMENT)^{1/4}$$

Propulsion Steam Boilers

$$CFM=25 \times (SHP/BOILER)^{2/3}$$

Propulsion Gas Turbines

$$CFM=0.9 \times (SHP/TURBINE)^{2/3} (DISPLACEMENT)^{1/4}$$

	CFM/HP
Propulsion Diesel Engines	4.00
Propulsion Generators:	
Air Cooled	5.00
Water Cooled	0.35
Electric Propulsion Motors	0.60

Turbogenerators:

Air Cooled	16.0 CFM/Rated KW
Water Cooled	$CFM=400 \times (KW/GENERATOR)^{1/3}$

	CFM/Rated KW
Ships Service Emergency Diesel Generators	
Air Cooled Generator	16.50
Water Cooled Generator	5.25
Motor Generator Sets	50.60

Ships Service or Emergency Gas

Turbine Generator (In acoustic encl.)	2.50
(No acoustic encl.)	9.00

Evaporators	$CFM=5 \times (GPD/DISTILLING PLANT)^{2/3}$
Reverse Osmosis Plant	.16 CFM/GPD
Fire Pumps (Electric)	20.0
Air Compressors	30.0

Air Conditioning Plants (centrifugal)	
(a) Compressor (hermetically sealed)	6.0
(b) Compressor (open type)	19.0
(c) Pumps (all)	21.6

Air Conditioning Plants (reciprocating)	25.0 CFM/TON
(a) Pumps (all)	21.6 CFM/HP

Auxiliary Boilers	$CFM = 240 \times (LB STM/HR)^{1/3}$
-------------------	--------------------------------------

2. Supply air quantities - compartments containing auxiliary boilers and no propulsion equipment:

	CFM/LB STM/HR
Boilers under 5000 pounds of steam/hour	1.0
Boilers over 5000 pounds of steam/hour	0.6

3. Supply air quantities - compartments containing no heat producing equipment except one of the five following types:

	CFM/Rated KW
Ships Service or Emergency	
Diesel Generators (Air Cooled Generators)	17.0
Ships Service or Emergency	
Diesel Generators (Water Cooled Generators)	6.5
Ships Service or Emergency	
Gas Turbine Generators (In acoustic encl.)	2.5
(No acoustic encl.)	9.0
Diesel Fire Pumps	5.5 CFM/BHP
Evaporators	$CFM=5.5 \times (GPD/DISTILLING PLANT)^{2/3}$

4. Supply air quantities include allowances for all items such as pumps, switchboards, etc., associated with or auxiliary to the listed equipments. If the combustion air requirement of diesels and auxiliary boilers is larger than that calculated above, the larger quantity shall be used.

c. Exhaust/Return:

The quantity of exhaust ventilation required for each machinery space shall be 125 percent of the mechanical supply quantity. See 3.2b for exception.

1.5 Air Distribution/Circulation:

Exhaust system terminals shall be located so that intake openings are in a horizontal plane. Locate exhaust terminals in the extreme overhead directly over principal heat sources. Heated air shall not be drawn across working areas. Exhaust fans serving main and auxiliary machinery spaces should discharge into uptake spaces.

Criteria Sheet No: 20 (Continued)

Main machinery spaces require special attention to ensure that adequate ventilation with an adequate number of supply terminals are provided to properly serve the working areas. Working areas are defined as main watch stations and secondary watch stations. These areas shall include:

Main Watch Stations:

Main switchboard
Main gage board
Boiler front, port and stbd, upper level
Boiler front, port and stbd, lower level
Evaporator

Secondary Watch Stations:

Main feed pump
Deaerating feed tanks
Turbogenerator auxiliary machinery
Propulsion auxiliary machinery
Ship Service Generator
Work bench
Log desks
Communications booth
Passageways frequently used when the air quantity provided is sufficient to permit additional terminals.

Supply systems shall provide 3000 CFM per terminal for main watch stations and 2000 CFM per terminal for secondary watch stations. Where this criteria calls for a larger quantity of air than is available for the space, the supply air quantity shall be increased to provide the air quantity required for watch-stander's stations. There shall be an adjustable terminal for each watch-stander at a watch-stander's station. The terminal outlet shall be directed at and located within 3 to 5 feet of the watch-stander's or equipment operator's torso. Terminal velocity shall be between 2500 and 3500 FPM per General Specifications Section 512.

Terminals shall be installed so that there are at least three diameters of straight duct upstream of the terminal and the terminal shall be located to direct air at a 45 degree angle downward toward the torso of the operator wherever practicable. Where difficulty is encountered by interference with pipe lines, hangers, etc., two small terminals in lieu of one large terminal may be used to serve the working area. Terminals, when so provided, shall ensure proper coverage of the area served.

A supply terminal shall be located within 6 to 9 inches of the intake opening of each compressor. The terminal shall be of the open-end duct type or expanding cone type and shall be located to discharge air directly into the air compressor intake opening. Terminal air quantity shall be equal to 150 per cent of the air compressor intake air requirement and the terminal face velocity shall be approximately equal to the air compressor intake opening face velocity.

1.6 Air Pressurization: See Section 1.4C

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
Access Trunk (Main Machinery Spaces)	7	---
Auxiliary Machinery Room	14	D/E
Auxiliary Machinery and Deballasting Compressor Room	14	D/E
Diesel Fire Pump Room	14	D/E
Emergency Generator Room	14	D
Engine Room	14	D
Evaporator Room	14	D/E
Fire Pump Room	14	D
Fire Room	14	D/E
Main Machinery Room (steam and diesel powered only)	14	D/E

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) An analysis shall be made of ventilation air requirements for the machinery spaces, based upon the equipment operating schedule as determined in a heat balance analysis. Only those pieces of machinery being utilized under each ship operation condition shall be included in the determination of ventilation air required for that condition. The ship condition requiring the largest quantity of ventilation air shall be used.

b) The supply and exhaust systems shall have two speed fans.

c) If two supply systems serve a single compartment, weather intakes are to be located on opposite sides of the ship. If more than two systems are used, weather intakes located on the same side of ship are to be separated as far as practicable.

3.2 Applicable only to:

Non-CPS Spaces

a) Natural supply ducts shall be provided from the weather to the upper level of machinery space access trunks (main and secondary), if practicable. Size duct for total pressure loss of one-half inch water gage based on the difference between machinery space supply and exhaust quantities.

b) If a natural supply duct is not provided, supply a branch from the machinery space supply system to the upper level of the access trunk, up to a maximum rate of change in the access trunk of 2 minutes. If the entire natural supply cannot be put into the access trunk, it shall be provided directly to the space. In firerooms and engine rooms, watch stations large enough to require more than one terminal are to have terminals from both port and starboard systems.

3.3 Applicable only to:

Emergency Generator Room
Diesel Fire Pump Room

a) Supply air shall be preheated.

Criteria Sheet No: 2C (Continued)

3.4 Applicable only to:

Propulsion Diesel Room

a) Unit heaters shall be provided to maintain 50°F in the compartment with all equipment secured.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: A****1.2 HVAC Treatment:**

	A/C	VENT	80
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	120°F	---

1.4 Air Quantity:

- a. Rate of Change (min): See special requirements.
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
Forced Draft Blower Room	7	0
Fuel Oil Service Pump Enclosure (Machinery Room)	14	0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

None

3.2 Applicable only to:**Forced Draft Blower Room**

- a) Forced Draft Blower Rooms used as plenums receive no ventilation. Enclosed Forced Draft Blower Rooms not used as plenums shall receive ventilation based on a one-minute rate of change, with both supply and exhaust taken from machinery room supply and exhaust ventilation systems.

3.3 Applicable only to:**Fuel Oil Service Pump Enclosure**

- a) The Fuel Oil Service Pump Enclosure shall receive a portion of the machinery space exhaust based on the ratio of enclosure volume to total machinery space volume times the total machinery space exhaust. This exhaust quantity shall be deducted from that required for the remainder of the machinery space.
- b) Natural supply shall be taken from the machinery room through normal access if practicable.

Criteria Sheet No: 2E

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: B

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M/N	---
b. Exhaust, Return Air	---	M	---
c. System Classification	---	W	---
d. Closure Classification	---	W	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	110°F	40°F See 3.0
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min):
A 15 minute rate of change for spaces containing air conditioning plants, otherwise a 20 minute rate of change.
- b. Supply:
Supply air quantities shall be the greater of the quantities defined in 3.1a plus air compressor requirements from within the space; or the required rate of change.

- c. Exhaust/Return:
Exhaust air shall equal 110% of supply air.

1.5 Air Distribution/Circulation: ---

a) Supply terminals shall be located to serve watch stations, working areas, log desks, work benches, and any other area where personnel would routinely frequent. The terminal outlet shall be directed at and located within 3 to 5 feet of the watch stander's or equipment operator's torso. Terminals shall be installed so that there are at least three diameters of straight duct upstream of the terminal and the terminal shall be located to direct air at a 45° angle downward, when practicable.

b) A supply terminal shall be located within 6 to 9 inches of the intake opening of each compressor. The terminal shall be of the open-end duct type or expanding cone type and shall be located to discharge air directly into the air compressor intake opening. Terminal air quantity shall be equal to 150 per cent of the air compressor intake air requirement and the terminal face velocity shall be approximately equal to the air compressor intake opening face velocity.

c) Exhaust system terminals shall be located so that intake openings are in a horizontal plane. Locate exhaust terminals in extreme overhead directly over principal heat sources. Extreme care should be taken to prevent heated air from being drawn across working areas. Exhaust fans serving main and auxiliary machinery spaces should discharge into uptake spaces. Where air conditioning plants are located, exhaust terminals shall terminate 9 inches above the deck and near the air conditioning plants. The terminal air quantity shall be equal to a 15 minute rate of change for the deck level volume where the plants are located.

d) Watch stations large enough to require more than one terminal are to have terminals from both port and starboard systems.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

Main Machinery Room
(gas turbine powered)

.7 0

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) The design temperature shall be maintained by the cooling effect of the weather air ventilation systems supplemented as necessary by a chilled water/air recirculation system. These systems shall be sized based on actual heat dissipation from equipment, components, and associated piping. It shall be assumed that insulated hot surfaces are 125°F. Compartment heat load shall be based on the Ship Operating Condition which develops the highest heat dissipation, based on a summation of only those equipments, components and associated piping which are in use under the various ship operating conditions. The cooling effect of the surrounding spaces is considered regardless of how the lower temperature is maintained.

b) If two supply systems serve a single compartment, weather intakes are to be located on opposite sides of the ship. If more than two systems are used, weather intakes located on the same side of ship are to be separated as far as practicable.

c) Spaces shall be maintained at 40°F during the heating season with all machinery and equipment secured. The space heating load shall not consider lighting or boundary transmission heat gains, and shall include the load from a weather air infiltration rate equal to a 60 minute rate of change, based on gross space volume.

d) Cooling shall be provided for equipment located within acoustic enclosures. The cooling shall be accomplished with ventilation supply system, exhaust system, air conditioning recirculation system, or any combination of these. Design conditions within the acoustic enclosures shall be based on equipment temperature requirements.

e) The supply and exhaust systems shall have two speed fans.

3.2 Applicable for CPS Spaces:

a) Natural supply shall be from the weather and shall be filtered to the same level as the mechanical supply ventilation air.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	100°F	50°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min): 10

b. Supply:

Supply air quantities are to be based on the allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater.

c. Exhaust/Returns: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

Cycloidal Propeller Room

ILLUM NOISE

14 D

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) The heat load for cycloidal propeller system equipment shall be calculated based on the actual heat dissipated.

b) The heating season calculations shall assume all cycloidal propeller system equipment to be secured.

c) Unit heaters shall be provided to maintain 50°F in the compartment with all the equipment and ventilation secured.

Preface to Design Criteria - Group 3
Secondary Machinery Spaces

Secondary machinery spaces, like main machinery spaces, are usually mechanically ventilated to limit space temperature to a tolerable level for ship's personnel (approximately 100°F).

A few spaces, such as steering gear rooms, are air conditioned. Air quantity is usually determined from the heat load which is generated from equipment. As with main machinery spaces, they are usually not air conditioned but may be if the spaces are to be included in a CPS Zone.

Steering Gear Power Room	3J
Steering Gear Ram Room	3A
Steering Gear Room	3J
Stern Gate Machinery Room	3I
VCHT Room	3H
Weapons Elevator Machinery Room	3I
Windlass Machinery Room	3I
Windlass Room	3G

APPLICABLE SPACES - GROUP 3

Compartment Name	Sheet No.
400 Hertz Converter Room	3J
400 Hertz Motor Generator Room	3L
400 Hertz Room	3J
Air Conditioning Machinery Room	3F
A.P.P. Motor Generator Room	3L
Aircraft Air Starting and Cooling Machinery Room	3E
Aircraft Crane Machinery Room	3I
Aircraft Strtg, Cooling, & Elec Servicing Equip Rm	3B
Antenna Test Tank Pump Room	3A
Arresting Gear Damper Room	3A
Arresting Gear Machinery Room	3D
Automatic Stanchion Machinery Room	3A
Barricade Stanchion Hydraulic Control Room	3M
Battery Charging Station	3L
Boat Handling Motor Control Room	3I
Bridle Arrestor Machinery Room	3I
CHT Pump Room	3H
Capstan Machinery Room or Space	3A
Compressor And Machinery Room	3F
Cooling Water Supply Equipment Room	3H
Crane Machinery Room (Electric)	3I
Deflector Machinery Room (Jet Blast)	3D
Drainage Manifold Room	3K
Elevator Machinery Room (Electric)	3I
Elevator Machinery Room (Hydraulic-Electric)	3D
Elevator Pit (Not subject to gas spillage)	3A
Emergency Steering Station	3A
GPCS Power Room (400 Hertz MG)	3L
Hanger Division Door Machinery Space	3I
Inert Gas Producer Room	3N
Jet Engine Test Facility Filter Area	3I
JP-5 Filter Room	3I
JP-5 Fueling Station	3A
JP-5 Pump Room	3H
Motor Generator Room	3L
Oxygen-Nitrogen Compressor Room	3C
Oxygen-Nitrogen Fill Room	3C
Oxygen-Nitrogen Production Room	3C
Oxygen-Nitrogen Reception & Stowage Room	3C
Oxygen-Nitrogen Storage Room	3C
Power Conversion Room	3J
Power Supply/Conversion Rooms	3J
Pump Room (Except Gas & Diesel Driven Pump Rooms)	3H
Refrigeration Machinery Room	3F
Sewage Plant	3H
Sewage Pump Room	3H
Sewage Treatment Room	3H
Shaft Alley	3K

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:**

Insulation categories shall be in accordance with General Specification 635 requirements for spaces at temperatures estimated.

1.2 HVAC Treatment:

These spaces are usually not ventilated as the prevailing temperature in each space is adequate for its intended use. However, spaces that are penetrated by untrunked catapult or main steam piping that is not of all welded construction or has traps or other fittings shall have ventilation in accordance with the requirements listed below.

A/C VENT BO

a. Supply Air	---	NM	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

Cooling Season Heating Season

a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):	10
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation:

Natural supply, if used, shall be from surrounding spaces.

1.6 Air Pressurization: ---**2.0 Applicable Spaces:**ILLUM NOISE

Antenna Test Tank Pump Room	14	D
Arresting Gear Damper Room	14	D
Automatic Stanchion Machinery Room	14	D
Capstan Machinery Room or Space	14	D
Elevator Pit (Not subject to gas spillage)	---	---
Emergency Steering Station	7	D
JP-5 Fueling Station	14	D
Steering Gear Ram Room	14	D

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

No ventilation required. Natural supply required only when cooling unit is in operation. Cooling unit has integral exhaust fan that discharges overboard.

	A/C	VENT	BO
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	40°F

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply:
Natural supply shall be sized to accommodate cooling unit air requirements.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Aircraft Starting, Cooling, and Electric 7 0
Servicing Equipment Room

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	105°F	---

1.4 Air Quantity:

- a. Rate of Change (min): See 3.0.
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:**

A minimum positive pressure of 0.25 inches of water is to be maintained in the space with access doors closed and compressors operating.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Oxygen-Nitrogen Compressor Room	7 0
Oxygen-Nitrogen Fill Room	7 0
Oxygen-Nitrogen Producer Room	7 0
Oxygen-Nitrogen Refrigeration & Stowage Room	7 0
Oxygen-Nitrogen Stowage Room	7 0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) Supply weather inlets shall not be closer than ten feet to an exhaust outlet.
- b) Supply and exhaust fans shall be electrically interlocked so that if one fan fails the other is shut off.
- c) Fan controllers shall be located outside the main access to the Oxygen-Nitrogen spaces.
- d) Fans shall be located outside the Oxygen-Nitrogen spaces.

3.2 Applicable only to:**Oxygen-Nitrogen (O₂N₂) Compressor Room**

- a) Provide independent supply and exhaust systems for this space.
- b) Rate of change shall be 1 minute.

3.3 Applicable only to:

**Oxygen-Nitrogen (O₂N₂) Fill Room
 Oxygen-Nitrogen (O₂N₂) Producer Room
 Oxygen-Nitrogen (O₂N₂) Stowage Room
 Oxygen-Nitrogen (O₂N₂) Refrigeration and Stowage Room**

- a) Supply air quantity for spaces below the weather deck shall have a 1 minute rate of change and spaces on or above the weather deck shall have a 6 minute rate of change.
- b) Provide one exhaust terminal terminating nine inches above the deck near the filling bench with the remaining exhaust air taken from the overhead.
- c) These spaces may be served by a common supply and exhaust system. However, these systems shall not serve any other ship's spaces.
- d) Supply air is to be filtered.
- e) Non-sparking centrifugal fans shall be provided for both supply and exhaust systems.
- f) Ductwork shall be watertight from the space to the weather.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C (Except Elevator Machinery Rooms shall be "B")

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	40°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

- a. Rate of Change (min):
See 3.0.
- b. Supply:
See 3.0.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Arresting Gear Machinery Room	7 0
Deflector Machinery Room (Jet Blast)	7 0
Elevator Machinery Room (Hydraulic-Electric)	7 0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) When calculating heating season requirements, consider all machinery secured.

3.2 Applicable only to:**Elevator Machinery Room (Hydraulic-Electric)**

- a) Quantities of mechanical exhaust and supply are based on an allowance for each element of hydraulic-electric machinery in the space as follows:

Equipment	CFM/Rated H.P. (motor)
Electric Motor	3.1
Electric Motor (Standby, idling)	2.9
Hydraulic Pump (A-End)	4.7
Hydraulic Pump (B-End)	4.7
L.C. Transformer	2.0 (CFM/KW)

Notes:

- Where an accumulator is interposed for the B-End of the hydraulic pump, no allowance is made.
- No allowance is made for A-End of standby machine since this unit does not operate unless first machine fails.
- An over-all use factor of 0.5 has been incorporated into the CFM allowance.

b) Machinery rooms containing elements of hydraulic equipment other than pumps and motors, such as accumulators, rams, etc., need not be ventilated unless they have control stations. Provide ventilation for spaces that have control stations on a basis of a ten-minute rate of change or a 15°F temperature rise, whichever is greater. Only transmission and lighting loads are considered.

3.3 Applicable only to:**Arresting Gear Machinery Room
Deflector Machinery Room**

- a) Quantities of mechanical exhaust and supply should be adequate to provide an allowance for each element of machinery in space as follows:

Equipment	CFM/Rated H.P. (motor)
Electric Motor	1.8
Electric Motor (Standby, idling)	1.7
Hydraulic Pump (A-End)	2.8
Hydraulic Pump (B-End)	2.8

Notes:

- An overall use factor of .4 has been incorporated into the CFM allowance.
- When a control station is located in the machinery space, provide a minimum of 1000 CFM per watch station.

None

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: A

1.2 HVAC Treatment:

Treatment is based on a gas-turbine compressor in the machinery room which takes its combustion air directly from the space.

	A/C	VENT	BO
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	120°F	25°F

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply:
Natural supply shall be sized to accommodate gas-turbine compressor air requirements.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:ILLUM NOISE

Aircraft Air Starting and Cooling
Machinery Room

7 D

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: B****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	110°F	40°F

1.4 Air Quantity:**a. Rate of Change (min):**

See 1.4b

b. Supply: ---**1. Air quantity shall be the greater of:**

a) The air quantity required to maintain the space at a 20°F temperature rise over the weather air temperature.

b) 6 minute rate of change (min).

c) The supply requirements for all equipment in the space based on:

1) Refrigeration plant - 115 CFM/TON

2) A/C Plants (centrifugal) CFM/HP
 (a) Compressor (hermetically sealed) 6.0
 (b) Compressor (open type) 19.0
 (c) Pumps (all) 21.6

3) A/C Plants (reciprocating) 25.0 CFM/TON
 (a) Pumps (all) 21.6 CFM/HP

4) Evaporators CFM=5(GPD/DISTILLING PLANT)^{2/3}

5) Reverse Osmosis Plant .16 CFM/GPD

6) Air Compressors 30.0 CFM/HP

7) Pumps
 (a) Electric 20.0 CFM/HP
 (b) Diesel 5.5 CFM/BHP

c. Exhaust/Return: ---**1.5 Air Distribution/Circulation: ---****1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Air Conditioning Machinery Room	14 D
Compressor And Machinery Room	14 D
Refrigeration Machinery Room	14 D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Standby equipment shall not be considered in heat load.

b) Equipment load shall be determined by the heat dissipation during in-service usage.

c) When calculating heating season requirements, consider all machinery secured.

d) One-third of the exhaust quantity shall be taken from terminals located 9 inches above the deck and near the plant machinery.

None

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	NM	---
c. System Classification	---	Z	---
d. Closure Classification	---	Y	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

- | | | |
|------------------------------|-------|------|
| a. Design Temperature: | --- | 50°F |
| b. Design Relative Humidity: | --- | --- |
| c. Assumed Temperature: | 100°F | --- |

1.4 Air Quantity:

- a. Rate of Change (min):
Ventilation is not required to limit temperature rise during cooling season. Mechanical supply is to be provided on the basis of the amount of air required for heating.
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural exhaust, if used, shall be to surrounding spaces or the weather.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:ILLUM NOISE

Windlass Room

7 0

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	--- Pump rooms with		
d. Closure Classification	--- vital service		
	pumps shall be "(W)", all others "Z"		

	Cooling Season	Heating Season
a. Design Temperature:	105°F	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

a. Rate of Change (min): 6

b. Supply:

Supply air quantities are to be based on the allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater. See 3.1b for those spaces containing water turbine drive pumps.

c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:**
See 3.0**2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
Cooling Water Supply Equipment Room	7	---
CHT Pump Room	7	0
JP-5 Pump Room	14	0
Pump Room (Except Gasoline & Diesel Driven Pump Rooms)	7	0
Sewage Plant	7	0
Sewage Pump Room	14	0
Sewage Treatment Room	7	0
VCHT Room	14	0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Pumps - electric drive

1. When a pump is in a compartment by itself or with a different type of heat producing equipment, the heat dissipated by the pump motor shall be used in determining the equipment load.

2. When two or more pumps are in a compartment, the in-service usage and the heat dissipated by the pump motors shall determine the equipment load.

b) Pumps - turbine drive (water)

1. In lieu of a design temperature of 105°F use 5.5 CFM per brake horsepower.

Equation for brake horsepower:

$$\text{Brake H.P.} = \frac{\text{GPM} \times \text{Head (in PSI)}}{1714 \times \text{Pump Efficiency}}$$

3.2 Applicable only to:

CHT Pump Room
Sewage Plant
Sewage Pump Room
Sewage Treatment Room
VCHT Room

a) Minimum design air quantity must be provided in both heating and cooling seasons.

b) A minimum negative pressure differential, with respect to adjacent spaces, of 0.25 inches W.G. shall be maintained when access doors are closed.

c) Compartment exhaust terminals shall be located in the vicinity of the CHT pumps and/or comminutors.

d) Two-thirds of the compartment exhaust shall be exhausted from terminals 9 inches above the deck, in the vicinity of the pumps and comminutors. One-third of the compartment air quantity shall be exhausted from the overhead.

e) Supply air terminals shall be installed in the overhead.

f) Spaces shall be equipped with an air flow alarm, Circuit HF, in accordance with the General Specifications for Ships of the U. S. Navy, Section 437.

3.3 Applicable only to:

JP-5 Pump Room

a) Minimum design air quantity must be provided in both heating and cooling seasons.

b) Supply air terminals shall be installed in the overhead.

c) For dedicated JP-5 pump rooms locate all exhaust terminals nine inches above the grating or deck.

Criteria Sheet No: 3H (continued)

d) JP-5 pump rooms with auxiliary equipment (e.g. fire pumps), take 50 percent of compartment total exhaust quantity from nine inches above grating in the vicinity of the JP-5 pumps, and the remaining quantity above the fire pump motors.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---
		See 3.0	

	Cooling Season	Heating Season
a. Design Temperature:	105°F	P See 3.0
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

a. Rate of Change (min): 10 ---

b. Supply:

Supply air quantities are to be based on the allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater. Minimum design air quantity must be provided in both heating and cooling seasons for JP-5 Filter Room.

c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Aircraft Crane Machinery Room	14	D
Boat Handling Motor Control Room	7	D
Bridle Arrester Machinery Room	14	D
Crane Machinery Room (Electric)	14	D
Elevator Machinery Room (Electric)	14	D
Ranger Division Door Machinery Space	14	D
Jet Engine Test Facility Filter Area	7	D
JP-5 Filter Room	7	D
Stern Gate Machinery Room	14	D
Weapons Elevator Machinery Room	14	D
Windlass Machinery Room	14	D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable only to:****Weapons Elevator Machinery Room**

a) Weapons Elevator Machinery Rooms with hydraulic equipment shall have a heating season design temperature of 60°F.

3.2 Applicable only to:**JP-5 Filter Room**

a) Exhaust terminal shall terminate nine inches above the deck.

b) JP-5 Filter Rooms with auxiliary equipment (e.g. pumps), shall take 50 percent of total compartment exhaust quantity from nine inches above grating, the remaining quantity from above the pump motor.

3.3 Applicable only to:**Windlass Machinery Room**

a) System and closure classification shall be "Z".

b) An exhaust terminal shall be located overhead in the vicinity of the band brake equipment.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Recirculation system return terminals shall be located near hot equipment that does not have an internal ventilation blower and within 6 inches of the discharge outlets of equipment provided with blowers that meet both the following conditions:

1. Rated heat dissipation is 500 watts or greater.
2. Air flow through the equipment has a temperature rise of 10°F or greater.

Air shall not be discharged onto switchboards.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
400 Hz Converter Rooms	14	0
400 Hz Room	7	0
Power Conversion Rooms	14	0
Power Supply/Conversion Rooms	14	0
Steering Gear Power Room	7	0
Steering Gear Room	14	0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) When calculating heating season requirements, consider all machinery secured.
- b) Electric convection heaters shall be provided to maintain 40°F in compartments containing freshwater-cooled equipment assuming that the ventilation system has been secured and all mechanical and electrical equipment has been secured.
- d) The operating condition that develops the highest heat dissipation will determine the equipment load.

3.2 Applicable only to:

Steering Gear Power Room
Steering Gear Room

- a) Heat load for equipment shall be calculated as follows:

Equipment	
Motor	10% of rated HP
Standby Motor (if motor is idling during normal operation)	9% of rated HP
Pump (A-End)	15% of rated HP
Pump (B-End)	15% of rated HP
Note: Overall use factor for all equipment is 60 percent.	

- b) When calculating heating season requirements, consider all machinery secured.

3.3 Applicable only to:

400 Hz Converter Rooms
400 Hz Room
Power Conversion Rooms
Power Supply/Conversion Rooms

- a) The equipment heat dissipation of a compartment shall be based on the maximum 400 Hz operation load plus 20 percent for growth and plus the heat dissipation of all other operational electrical/electronics equipment located within the space.

Criteria Sheet No: 3X

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	See 3.0	---
d. Closure Classification	---	See 3.0	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	105°F	40°F

1.4 Air Quantity:

a. Rate of Change (min):	10	---
b. Supply:	---	---
c. Exhaust/Return:	---	---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

Drainage Manifold Room
Shaft Alley

ILLUM	NOISE
7	---
7	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) Spaces containing fire pumps shall be considered a Fire Pump Room (Criteria Sheet No. 2C).

3.2 Applicable only to:

Shaft Alley

a) Spaces that contain no bearings, brakes, fuel oil transfer manifolds or drainage manifolds, or other equipment are considered voids and receive no ventilation or blowout.

b) Closures shall be operable from the watch station in the space.

c) Damage control classification for system and closure is (W).

3.3 Applicable only to:

Drainage Manifold Room

a) Damage control classification for system and closure is "Z".

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	105°F	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

a. Rate of Change (min):	6
b. Supply: See 3.0.	
c. Exhaust/Return: ---	

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
400 Hz Motor Generator Room	7	0
A.D.P. Motor Generator Room	7	0
Battery Charging Station	14	---
GFCS Power Room (400 Hz M.G.)	7	0
Motor Generator Room	7	0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) The total quantity of CFM obtained on a temperature rise basis is limited to a 0.5 minute rate of change. Spot cooling shall be used with 500 to 700 CFM for each terminal where practical.

b) Battery storage and/or charging racks, if any, shall be provided with exhaust hoods.

3.2 Applicable only to:**Spaces containing battery charging racks**

a) The ventilation supply air quantity shall be the greater of the following (except as stated in 3.1 above):

1. 6 minute rate of change
2. Cooling season design temperature
3. Volume to prevent the formulation of an explosive mixture:

$$V = (0.076)CN$$

where

V = volume of the exhaust air in CFM

C = battery capacity in ampere-hours

N = number of batteries

(0.076) = a constant in CFM per ampere-hour/battery

b) Exhaust fans shall be a centrifugal non-sparking type. An existing vaneaxial fan exhaust system may be used if the exhaust air quantity for the battery charging area does not exceed 10 percent of the existing system's exhaust air quantity.

c) Enclosed battery racks with ventilation terminals, if used, will be provided with a minimum of 75 CFM of exhaust air.

d) The power supply to the battery charger shall be interlocked with the supply and exhaust fans serving the compartment to prevent battery charging when the fans are not operating.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): 6
- b. Supply:
Supply air quantities are to be based on the allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater.

c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Barricade Stanchion Hydraulic Control Room 14 E

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	N	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	40°F

1.4 Air Quantity:

- a. Rate of Change (min): 4
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Inert Gas Producer Room

7 D

Preface to Design Criteria - Group 4
Shops (excluding weapons shops)

Workshops and working spaces have treatments based on maintaining the best possible working conditions for the personnel involved and complying or exceeding all safety and health regulations. For shops designated to be air conditioned this consideration must be tempered by the impact on the ships air conditioning plant equipment loads or large quantities of outside air for fume or dust removal. When an excessive load condition arises in compartments that do not have critical temperature or humidity maintenance requirements, these compartments may be ventilated. Where, due to the particular space arrangement, no equipment is provided that would create unusual air conditioning loads in compartments that are specified to be ventilated these compartments may be air conditioned.

In shops that have multiple functions, the maximum load function is to be the governing design factor. When this creates the condition of a small portion of a compartment raising the requirements for the entire space, consideration should be given to the possibility of isolating that portion of the compartment.

No attempt has been made to discuss herein compartments that, due to size or special equipment, have unusual requirements. Design criteria for these spaces must be developed on a case basis.

APPLICABLE SPACES - GROUP 4

Compartment Name	Sheet No.
50 Caliber Armory	4A
Addressograph Room	4A
Air Filter Cleaning Shop	4H
Aircraft Engine Shop	4C
Alkaline Battery Shop	4Q
Analysis Room (Noise & Vibration Test Room)	4A
Armory	4A
Arresting Gear Shop	4C
Arresting Gear Terminal Socket Pouring Shop	4C
Automatic Data Processing Room	4A
Aviation Arresting Gear Shop	4C
Aviation Composite Material Workshop	4B
Aviation Engine Shop	4C
Aviation Flotation Equipment Shop	4K
Aviation Gun Cleaning Room	4N
Aviation Gun System Shop	4H
Aviation Helo Workshop	4A
Aviation Hydraulic Pneumatic Shop (Clean Room)	4F
Aviation Hydraulic Pneumatic Shop (Dirty Room)	4B
Aviation Hydraulic Pneumatic Shop (Test/Clean Rm)	4F
Aviation Hydraulic Shop	4C
Aviation Internal Combustion Engine Shop	4C
Aviation Launching Accessories Shop	4C
Aviation Mobile Equipment Shop	4C
Aviation Nondestructive Test & Inspection Shop	4A
Aviation Onboard Oxygen Generator System Shop	4B
Aviation Ordnance Shop	4C
Aviation Oxygen Equipment Shop	4B
Aviation Parachute Equipment Shop	4K
Aviation Pneumatic Shop	4C
Aviation Squadron Maintenance Shop	4C
Aviation Squadron Work Center	4B
Aviation Structures Shop	4C
Aviation Suit Laundry (Air Conditioned)	4J
Aviation Suit Laundry (Ventilated)	4I
Aviation Survival Equipment Shop	4K
Aviation Tire and Wheel Shop	4C

Aviation Tool Issue Room	4C
Avionics Equipment Cleaning Shop	4B
Avionics Shop	4A
Barber Shop	4A
Boatswain Workshop	4A
Boiler Shop	4D
Bunting Shop	4A
Burner Cleaning Shop	4E
CIWS Workshop	4A
CO ₂ Transfer Shop	4P
Canvas Shop	4A
Carpenter Shop	4E
Closed Circuit TV Equipment Shop	4A
Combustion Control Repair Shop	4A
Communications Repair	4A
Crypto Repair Facility (CRF) Shop	4B
Crypto Repair Facility	4A
Data Systems Repair	4A
Diving Gear Locker and Shop	4E
Dry Cleaning and Tailor Shop (Air Conditioned)	4J
Dry Cleaning and Tailor Shop (Ventilated)	4I
Dry Cleaning Material Tank	4M
Dry Cleaning Shop (Air Conditioned)	4J
Dry Cleaning Shop (Ventilated)	4I
Dry Provision Issue Room	4A
EOD Diving Gear Locker and Shop	4E
Electric Accounting Machine Room	4A
Electrical Shop	4A
Electronics Calibration Laboratory	4G
Electronics Shop	4A
Electronics Shop-Shielded Area	4A
Electronics Test Equipment Shop	4A
Engineering Fuel Test Laboratory	4B
Engraving Room	4E
Fire Control Shop	4A
Flex Hose Shop	4A
Foundry	4Q
Gas Turbine Shop	4C
General Workshop	4A
Grinding & Tool Work Room	4E
Ground Support Equipment Shop	4C
Gun & Launcher Shop	4B
Gyro Compass Shop	4F
Helicopter Shop	4C
Hobby Shop	4A
Hull Repair Shop	4A
Hydraulic Repair Shop	4C
Hydraulic Testing Shop (Cleaning Area)	4C
Hydraulic Testing Shop (Test Area)	4F
ICE Shop Governor & Injector Test Room	4B
Interior Communication Shop	4A
Internal Combustion Engine Shop	4E
Issue Rooms	4A
Keypunch Room	4A
Lagging Shop	4A
Laundry (Air Conditioned)	4J
Laundry (Ventilated)	4I
Laundry Issue Room (Air Conditioned)	4J
Laundry Issue Room (Ventilated)	4I
Laundry Receiving Room (Air Conditioned)	4J
Laundry Receiving Room (Ventilated)	4I
Locksmiths Shop	4A
Lube Oil Filter Shop	4Q
MIRCS Pressure Calibration Room	4A
MIRCS Standards Room	4G
MIRCS Temperature Room	4G
MNS Maintenance and Diving Gear Locker	4A
MTACCS Repair	4B
Machine Shop	4E
Marine Press Shop (Air Conditioned)	4J
Marine Press Shop (Ventilated)	4I

Materials Laboratory	4A
Mechanical Calibration Laboratory	4G
Mechanical Instrument Shop	4A
Metalsmith Shop	4D
Micro-Miniature (2M) Repair Work Center	4R
Missile Checkout Equipment Shop	4A
Missile Handling Equipment Shop	4C
NSSMS Workshop	4A
Navigation Equipment Shop	4A
Noise and Vibration Analysis Room	4A
Noise and Vibration Test Room	4A
Nondestructive Test Laboratory	4A
Office (Shop)	4A
Oil & Water Test Laboratory	4A
Oil Analysis Laboratory	4A
Optical Shop	4F
Ordnance Shop	4B
Outside Machine Shop	4E
Painting and Refinishing Room	4B
Pipe Shop	4D
Printed Circuit Board Repair Shop	4A
Propulsion Control Shop And Test Laboratory	4B
Provision Issue Room	4A
Radiographic Darkroom	4A
Radiographic Viewing Room	4A
Rubber and Plastic Shop	4D
Seamart	4A
Secondary Communication Repair Shop	4A
Sheetmetal Shop	4D
Shipfitter Shop	4D
Squadron Work Center	4B
Storage Battery Shop (Lead Acid)	4L
Submarine Antenna Shop	4B
Survival Support Device Recharging Shop	4C
Tailor Shop (Air Conditioned)	4J
Tailor Shop (Ventilated)	4I
Teletypewriter Shop	4A
Test Equipment Shop (Noncritical)	4A
Test Laboratory (Oil, Water, and Gages)	4A
Tool Issue Room	4A
Typewriter Shop	4A
UNREP Workshop	4C
Valve Shop	4D
Watch Repair Shop	4A
Welding Shop	4D

Criteria Sheet No: 4A

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F

1.2 HVAC Treatment:

	A/C	VENT	BD
a. Supply Air	M	---	---
b. Exhaust/Return Air	NM	---	---
c. System Classification	Aviation shops shall be "VM", all other spaces "Z".		
d. Closure Classification			

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply:
Spaces that utilize solvents or other volatile liquids, that would require mechanical exhaust ventilation to effectively remove offensive or dangerous fumes, shall be ventilated on the basis of a six minute rate of change or a ten degree rise above weather air (whichever results in the larger quantity of air). These spaces may be air conditioned if mechanical exhaust can be provided that precludes recirculation of fumes, and does not significantly increase air conditioning load.
Spaces where welding is conducted shall be ventilated on the basis of a 4 minute rate of change or enough air to satisfy hood requirements. A temperature of 90°F shall be assumed.
- c. Exhaust/Return:
Natural return, if used, shall be via surrounding passages.

1.5 Air Distribution/Circulation:

Provide a return exhaust terminal over ultrasonic cleaners to conduct heat directly into the air conditioning system, except for ultrasonic vapor degreasers. These shall be provided with a mechanical exhaust hood in accordance with the latest edition of "Industrial Ventilation - A Manual of Recommended Practice" by the Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902 exhausting directly to the weather.

1.6 Air Pressurization:

See 3.0.

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
50 Caliber Armory	14	D
Addressograph Room	14	D
Alkaline Battery Shop	28	D
Armory	14	D

Automatic Data Processing Room	14	A
Aviation Helo Workshop	28	D
Aviation Nondestructive Test & Inspection Shop	28	D
Avionics Shop	28	D
Barber Shop	28	B
Boatswain Workshop	28	E
Bunting Shop	28	D
CIWS Workshop	28	D
Canvas Shop	28	D
Closed Circuit TV Equipment Shop	28	D
Combustion Control Repair Shop	28	D
Communications Repair	28	D
Crypto Repair Facility	28	D
Data Systems Repair	28	D
Dry Provision Issue Room	14	A
Electric Accounting Machine Room	14	A
Electrical Shop	28	A
Electronics Shop	28	A
Electronics Shop - Shielded Area	28	D
Electronics Test Equipment Shop	28	D
Fire Control Shop	28	D
Flex Hose Shop	28	A
General Workshop	28	D
Hobby Shop	28	A
Hull Repair Shop	28	A
Interior Communication Shop	28	D
Issue Rooms	14	D
Keypunch Room	14	D
Lagging Shop	28	D
Locksmith Shop	28	D
MIRCS Pressure Calibration Room	28	A
MNS Maintenance and Diving Gear Shop	28	D
Materials Laboratory	28	A
Mechanical Instrument Shop	28	D
Missile Checkout Equipment Shop	28	D
NSSMS Workshop	28	D
Navigation Equipment Shop	28	D
Noise and Vibration Analysis Room	28	A
Noise and Vibration Test Room	28	B
Nondestructive Test Laboratory	14	D
Office (Shop)	28	A
Oil and Water Test Laboratory	28	A
Oil Analysis Laboratory	28	A
Printed Circuit Board Repair Shop	28	D
Provision Issue Room	14	A
Radiographic Dark Room	14	D
Radiographic Viewing Room	14	D
Seamart	14	E
Secondary Communication Repair Shop	28	D
Teletypewriter Shop	28	D
Test Laboratory (Oil, Water, and Gages)	28	D
Test Equipment Shop (Noncritical)	28	D
Tool Issue Room	14	E
Typewriter Shop	28	D
Watch Repair Shop	28	D

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

3.2 Applicable only to:

Noise & Vibration Analysis Room
Noise & Vibration Test Room

- a) Particular attention shall be given to the initial system design to ensure the space noise levels are maintained.

Criteria Sheet No: 4A (continued)

3.3 Applicable only to:

Automatic Data Processing Room
Electric Accounting Machine Room

a) Provide mechanical return to pick up room heat dissipated from electronic equipment. Equipment that is provided with internal ventilation blowers shall have a return terminal located within 6 inches of the discharge outlet of the blower. Terminals shall be arranged to preclude water or spray from entering electronic equipment.

3.4 Applicable only to:

Fire Control Shop
Navigation Equipment Shop

a) On submarine tenders, provide temperature and dewpoint recorders.

3.5 Applicable only to:

Electronic Shop - Shielded Area

a) All ventilation and air conditioning space boundary penetrations shall be covered by bonded metal to metal screen with 1/16-inch phosphor bronze mesh, or 1/4-inch aluminum honeycomb mesh screen to prevent radio frequency leakage.

3.6 Applicable only to:

Teletypewriter Shop
Typewriter Shop

a) Fan discharge from the hot air dryer shall be led directly to weather via an independent duct. If the exhaust duct work will result in reducing the air discharge below the manufacturer's rated CFM, provide an auxiliary fan interlocked with the dryer cabinet fan for simultaneous operation. Do not include dryer CFM requirement in space air balancing; however a natural supply opening, adjoining to an air conditioned area, shall be provided to satisfy the additional air required during drying operation. An air imbalance within the space will be acceptable during dryer operation.

3.7 Applicable only to:

Electrical Shop

a) Provide a backdraft exhaust hood in accordance with "Industrial Ventilation" over the insulation varnish dip tank.

3.8 Applicable only to:

Electronic Shop

a) Provide an independent exhaust system to serve all work stations and the curing oven.

3.9 Applicable only to:

Dry Provision Issue Room

a) If this space is located in a ventilated area where air conditioning of this space would be impractical, this space shall be ventilated on the basis of a six-minute rate of change or a ten degree rise above weather air (whichever results in the larger quantity of air).

3.10 Applicable only to:

Crypto Repair Facility (CRF) Shop

a) Use 500 watts or the actual equipment heat dissipation of equipment being tested, whichever is greater, in the cooling season heat load calculation.

3.11 Applicable only to:

Nondestructive Test Lab

a) Provide a mechanical exhaust hood in accordance with "Industrial Ventilation" over the liquid penetrant sink.

3.12 Applicable only to:

General Workshop

a) Provide a mechanical exhaust hood in accordance with Figure 4A from the welding slab area.

3.13 Applicable only to:

Oil Analysis Laboratory
Oil and Water Test Laboratory
Test Laboratory (Oil, Water, Gages)

a) Provide a mechanical exhaust hood in accordance with "Industrial Ventilation" over the test table and the chemical sink in the test lab.

3.14 Applicable only to:

Alkaline Battery Shop

a) A 75 CFM (minimum) exhaust from a "(W)" system shall serve the battery charging racks. The replenishment air to the cooling coil shall be increased accordingly.

3.15 Applicable only to:

Aviation Non-Destructive Test and Inspection Shop

a) An exhaust terminal leading to the weather exhausting at least 200 CFM located 9 inches above the deck shall be installed near the dye penetrant workbench to remove dye penetrant fumes.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	Aviation shops shall		
d. Closure Classification	be "W", all other		
	spaces "Z".		

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:**a. Rate of Change (min) 6****b. Supply:**

Spaces that utilize solvents or other volatile liquids, that require mechanical exhaust ventilation to effectively remove offensive or dangerous fumes, shall be ventilated on the basis of a six-minute rate of change, a ten degree rise above weather air, or as stated in 3.0, whichever results in the larger quantity of air. These spaces may be air conditioned if mechanical exhaust that precludes recirculation of fumes can be provided.

c. Exhaust/Return: ---**1.5 Air Distribution/Circulation:**

Provide a return exhaust terminal over ultrasonic cleaners to conduct heat directly into the air conditioning system, except for ultrasonic vapor degreasers which shall be provided with a ship's mechanical exhaust hood.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Aviation Composite Material Workshop	28 D
Aviation Hydraulic Pneumatic Shop (Dirty Room)	28 D
Aviation Onboard Oxygen Generator System Shop	28 D
Aviation Oxygen Equipment Shop	28 D
Aviation Squadron Work Center	28 D
Avionics Equipment Cleaning Shop	28 D
Crypto Repair Facility Shop	28 D
Engineering Fuel Test Laboratory	28 A
Gun & Launcher Shop	28 D
ICE Shop Governor & Injector Test Room	28 D
MTACCS Repair	28 D
Ordnance Shop	28 D
Painting and Refinishing Room	28 D
Propulsion Control Shop And Test Laboratory	28 E

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Hoods exhausting to the weather shall be provided over equipment emitting noxious or toxic fumes or excessive quantities of heat. Examples are: dipping tank, microsonic cleaning machines, table-type baking ovens, degreaser and parts washer tanks. See the latest edition of "Industrial Ventilation - A Manual of Recommended Practice" by Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902, for guidance in the design and selection of acceptable exhaust hoods and devices.

3.2 Applicable only to:**Aviation Composite Material Workshop**

a) Resin mixing enclosure shall be provided with an overboard exhaust designed for 300 CFM.

b) Exhausting of fumes from worktable is required via a nonmetallic flexible hose of sufficient length to cover working surface. The exhaust hose shall be provided and fitted with a "Bean-Bag" at the end of the hose of suitable weight and flexibility to conform to contoured surfaces and remain stationary. A diverting damper shall be installed in the exhaust system so that either worktable or resin mixing enclosure are provided with exhaust air. A HEPA Filter located downstream of the diverting damper shall also be installed.

c) A negative pressure within the space of 0.25 inches of water shall be maintained when access doors are closed.

d) The supply air branch shall be fitted with a solenoid operated damper interlocked with the exhaust fan such that the damper is closed when the exhaust fan does not operate and is open when the exhaust fan operates.

3.3 Applicable only to:**Aviation Hydraulic Pneumatic Shop (Dirty Room)**

a) Equipment fitted with internal blowers, such as the microsonic filter cleaner, shall have an exhaust terminal within 3 inches of the internal fan discharge. The minimum exhaust quantity for the terminal shall be 115 percent of the equipment fan discharge quantity.

b) Hose cut-off machines shall be equipped with dust collectors.

c) For open tank applications, slot type backdraft exhaust hoods shall be provided where material is toxic and/or where worker must bend over the tank. Canopy hoods shall be used for other applications. Hoods shall be in general accordance with "Industrial Ventilation."

3.4 Applicable only to:

Aviation Onboard Oxygen Generator System Shop
Aviation Oxygen Equipment Shop

- a) An exhaust duct shall be provided from the oxygen components test stand.
- b) If air conditioned, all exhaust (return) air shall be discharged overboard.

3.5 Applicable only to:

Paint and Refinishing Room

- a) Spray booths shall be equipped with an independent exhaust system.
- b) The exhaust air quantity through the spray booth shall be determined as follows:
 - $Q = AV$
where
 Q = spray booth exhaust air quantity (cfm)
 A = cross-sectional area of spray booth work opening perpendicular to airflow (sq. ft.)
 V = air flow velocity (fpm) = 200 fpm
- c) Mechanical supply shall equal mechanical exhaust.
- d) Mechanical supply shall be introduced into the space in such a manner as to minimize cross drafts at the spray booth.
- e) A non-sparking centrifugal fan shall be used in the exhaust system.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M/N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	W	---
d. Closure Classification	---	W	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:**a. Rate of Change (min) See 1.4.c****b. Supply:**

Supply air quantities are to be based on a temperature rise over weather air temperature or the minimum rate of change, whichever is greater. Where exhaust air requirements exceed these quantities, natural supply to balance the exhaust shall be taken from surrounding spaces, if available. Otherwise supply air quantity shall be increased to balance the exhaust, except for spaces containing welding or burning equipment where mechanical exhaust must exceed mechanical supply.

c. Exhaust/Return:

Spaces that do not contain welding or burning equipment shall be provided with a mechanical exhaust sufficient to produce a eight-minute rate of change.

Spaces containing welding or burning equipment shall be provided with mechanical exhaust to be the greater of the following:

- A four-minute rate of change
- A quantity sufficient to meet hood requirements
- 120 percent of the mechanical supply

Exhaust fume collectors in accordance with Figure 4A shall be installed over welding slabs and welding tables.

1.5 Air Distribution/Circulation:

Equipment fitted with internal exhaust fans, such as large bake ovens and electric furnaces, shall discharge directly to the weather via an independent exhaust system. Where use of this equipment is of an occasional nature, do not include the air required for the internal fans when calculating the space mechanical air quantity requirements. An imbalance within the area will be acceptable during equipment operation.

Exhaust hoods shall be provided over equipment emitting noxious or toxic fumes or excessive quantities of heat. Examples are tectyl tanks, soaking tanks, steam cleaning areas, dipping

tanks, cleaning machines, ultrasonic cleaning machines, table-type baking ovens, electric furnaces, and forges. For open tank applications, backdraft exhaust hoods shall be provided where material is toxic and/or where worker must bend over tank or process. Canopy hoods shall be used for other applications. See latest edition of "Industrial Ventilation - A Manual of Recommended Practice" by Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902, for guidance in the design and selection of acceptable exhaust hoods and devices.

Ultrasonic cleaning equipment equipped with internal fans for hood exhaust or transducer cooling shall be fitted with a duct directed at and terminated within three inches of a ship's exhaust terminal. The minimum exhaust quantity for the terminal shall be 115 percent of the fan discharge quantity.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Aircraft Engine Shop	28	D
Arresting Gear Shop	28	D
Arresting Gear Terminal Socket Pouring Shop and Annex	28	D
Aviation Arresting Gear Shop	28	D
Aviation Engine Shop	28	D
Aviation Hydraulic Shop	28	D
Aviation Internal Combustion Engine Shop	28	D
Aviation Launching Accessories Shop	28	D
Aviation Mobile Equipment Shop	28	D
Aviation Ordnance Shop	28	D
Aviation Pneumatic Shop	28	D
Aviation Squadron Maintenance Shop	28	D
Aviation Structural Shop	28	D
Aviation Tire and Wheel Shop	28	D
Aviation Tool Issue Room	28	D
Gas Turbine Shop	28	D
Ground Support Equipment Shop	28	D
Helicopter Shop	28	D
Hydraulic Repair Shop	28	D
Hydraulic Testing Shop (Cleaning Area)	28	D
Missile Handling Equipment Shop	28	D
Survival Support Device Recharging Shop	21	D
UNREP Workshop	28	D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

Shops containing facilities for operating internal combustion engines shall have an exhaust duct with two connections and flexible ducts to remove engine exhaust fumes.

3.2 Applicable only to:**Arresting Gear Terminal Socket Pouring Shop and Annex**

- Provide exhaust hoods as follows: A canopy type hood shall be used over the melting furnace, while slotted hoods (similar to plate No. VS-502 of "Industrial Ventilation - a Manual of Recommended Practice" latest edition, P.O. Box 453, Lansing, Michigan) shall be used for the coolant tanks and hot plates. Provide an exhaust terminal behind the grit blast cabinet.

Criteria Sheet No: 4C

b) Provide independent supply and exhaust systems with the motor controllers located outside the space and adjacent to the space access. Fans shall be wired for high speed only and interlocked for simultaneous operation.

c) The exhaust ventilation shall utilize a terminal on a flexible hose (similar to Figure 4A) which can be placed in the vicinity of socket pouring operation to remove the fumes from the source. A damper shall be provided in the exhaust system between the fixed terminal and the flexible hose take off branch. The flexible hose shall be sized to exhaust a minimum of 300 CFM. The damper shall be located for easy access.

3.3 Applicable only to:

Survival Support Device Recharging Shop

a) Supply air shall be filtered with Navy Standard filters.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M/N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	2	---
d. Closure Classification	---	2	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): 4
- b. Supply:
Supply air quantities are to be based on a temperature rise over weather air temperature or the minimum rate of change, whichever is greater.
- c. Exhaust/Returns:
Spaces containing welding or burning equipment shall be provided with a minimum mechanical exhaust sufficient to produce a four-minute rate of change, or sufficient to meet hood requirements, or 120 percent of the mechanical supply, whichever is greater. Exhaust fume collectors shall be installed over welding slabs and welding tables.

1.5 Air Distribution/Circulation:

Exhaust hoods shall be provided over equipment emitting noxious or toxic fumes or excessive quantities of heat. Examples are tectyl tanks, soaking tanks, steam cleaning areas, dipping tanks, cleaning machines, ultrasonic cleaning machines, table-type baking ovens, electric furnaces, and forges. For open tank applications, backdraft exhaust hoods shall be provided where material is toxic and/or where worker must bend over tank or process. Canopy hoods shall be used for other applications. See latest edition of "Industrial Ventilation - A Manual of Recommended Practice" by Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902, for guidance in the design and selection of acceptable exhaust hoods and devices.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Boiler Shop	28 0
Metalsmith Shop	28 0
Pipe Shop	28 0
Sheetmetal Shop	28 0
Shipfitter Shop	28 0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) The exhaust ventilation shall utilize a terminal on a flexible hose (similar to Figure 4A) which can be placed in the vicinity of the welding operation to remove the fumes from the source. The flexible hose shall be sized to exhaust a minimum of 300 CFM.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M/W	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	100°F	65°F See 3.0

b. Design Relative Humidity: --- ---

c. Assumed Temperature: --- ---

1.4 Air Quantity:

a. Rate of Change (min): 8
(see 1.4.b)

b. Supply:

Supply air quantities are to be based on a temperature rise over weather air temperature or the minimum rate of change, whichever is greater. Where exhaust air requirements exceed these quantities; natural supply to balance the exhaust shall be taken from surrounding spaces, if available. Otherwise supply air quantity shall be increased to balance the exhaust.

c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Equipment fitted with internal exhaust fans, such as large bake ovens and electric furnaces, shall have the discharge led directly to the weather via an independent duct. Where use of this equipment is of an occasional nature, do not include the air required for the internal fans when calculating the space mechanical air quantity requirements. An imbalance within the area will be acceptable during equipment operation.

Exhaust hoods shall be provided over equipment emitting noxious or toxic fumes or excessive quantities of heat. Examples are tectyl tanks, soaking tanks, steam cleaning areas, dipping tanks, cleaning machines, ultrasonic cleaning machines, table-type baking ovens, electric furnaces, and forges. For open tank applications, backdraft exhaust hoods shall be provided where material is toxic and/or where worker must bend over tank or process. Canopy hoods shall be used for other applications. See latest edition of "Industrial Ventilation - A Manual of Recommended Practice" by Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902, for guidance in the design and selection of acceptable exhaust hoods and devices.

Ultrasonic cleaning equipment equipped with internal fans for hood exhaust or transducer

cooling shall be fitted with a duct directed at and terminated within three inches of a ship's exhaust terminal. The minimum exhaust quantity for the terminal shall be 115 percent of the fan discharge quantity.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Burner Cleaning Shop	28 D
Carpenter Shop	28 D
Diving Gear Locker and Shop	28 D
EOD Diving Gear Locker and Shop	28 D
Engraving Room	28 D
Grinding & Tool Work Room	28 D
Internal Combustion Engine (ICE) Shop	28 D
Machine Shop	28 D
Outside Machine Shop	28 D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

None

3.2 Applicable only to:

Diving Gear Locker and Shop
EOD Diving Gear Locker and Shop

a) Heating season design temperature shall be 75°F.

b) Provide 75 CFM exhaust connected to the wet suit stowage locker.

3.3 Applicable only to:

Internal Combustion Engine Shop

a) Exhaust ducts shall be fitted with two connections and flexible ducts to remove engine exhaust fumes.

3.4 Applicable only to:

Carpenter Shop

a) Dust collectors shall be provided to serve the various equipment in the shop. These collectors shall be similar to plates VS-701 through VS-709 in "Industrial Ventilation - A Manual of Recommended Practice" by Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902."

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NH	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---
Natural return, if used, shall be via surrounding passages, or as specified in 3.0.

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:**

A minimum positive pressure of 0.25 inch of water is to be maintained in the space, with access doors closed.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Aviation Hydraulic Pneumatic Shop (Clean Rm)	28	D
Aviation Hydraulic and Pneumatic Shop (Test Room/Clean Room)	28	D
Gyro Compass Shop	28	D
Hydraulic Testing Shop (Test Area)	28	D
Optical Shop	28	D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

None

3.2 Applicable only to:

Aviation Hydraulic Pneumatic Shop (Clean Rm)
Aviation Hydraulic and Pneumatic Shop (Test Room/Clean Room)

- a) Natural exhaust shall be via adjacent dirty room.
- b) A throw-away cartridge type air filter (with an efficiency of 50 - 60 percent on 0.3 micron DOP smoke) shall be installed downstream of the cooling coil in the recirculation system.

3.3 Applicable only to:

Optical Shop

- a) Provide a mechanical exhaust terminal over cleaning machine.
- b) A Navy Standard air filter shall be installed in the replenishment air branch serving the Optical Shop recirculation system.

3.4 Applicable only to:

Gyro Compass Shop
Hydraulic Testing Shop (Test Area)

- a) A throw-away cartridge type air filter (with an efficiency of 50 - 60 percent on 0.3 micron DOP smoke) shall be installed downstream of the cooling coil in the recirculation system.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: G****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	73±4°F	73±4°F
b. Design Relative Humidity:	50%	50%
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

Discharge outlets shall be sized to minimize localized turbulence.

1.6 Air Pressurization:

A positive pressure (minimum 0.25 inch of water) shall be maintained in calibration areas when access doors are closed. A positive pressure (minimum 0.15 inch of water) shall be maintained in related areas opening directly into calibration areas. A pressure differential (minimum 0.10 inch of water) shall be between calibration areas and related areas opening directly into same.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Electronics Calibration Laboratory	28 0
MIRCS Standards Room	28 0
MIRCS Temperature Room	28 0
Mechanical Calibration Laboratory	28 0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Thermo-Humidographs, or similar temperature-humidity monitoring devices shall be located within calibration areas.

b) Ventilation and air conditioning ducts shall not extend more than 12 inches below the overhead in calibration areas where shelves are to be installed.

c) All ventilation and air conditioning duct penetrations of electronics calibration space boundaries shall be covered by a bonded metal to metal screen, with 1/16-inch phosphor bronze mesh, or 1/4-inch aluminum honeycomb mesh screen to prevent radio frequency leakage.

d) A HEPA type air filter (with an efficiency of 99.97 percent on 0.3 micron DOP smoke) shall be installed downstream of the cooling coil in the recirculation system, and in the replenishment air branch (unless replenishment air branch is directly connected to the recirculation system upstream of the recirculation system air filter).

e) Hoods over furnaces and temperature baths shall be provided, exhausting to the weather via a (W) exhaust system. The hood design shall be in accordance with the latest edition of "Industrial Ventilation - A Manual of Recommended Practice" by Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902.

f) These spaces may be broken into several areas, in which case temperature and humidity requirements apply only to the calibration areas and those related areas opening directly into calibration areas. Those areas not opening directly into calibration areas shall be designed to cooling season design temperature of 80°F, heating season design temperature of 65°F, and design relative humidity of 55%.

g) Cooling season heat load calculation shall use the actual equipment heat dissipation as obtained from the manufacturer with a 100% use factor.

h) Provide replenishment air sufficient to balance exhaust hood requirements.

i) Discharge outlets shall be sized to minimize localized air turbulence.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M/N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

- a. Rate of Change (min): 4
- b. Supply:
Mechanical supply shall be not more than 90 percent nor less than 50 percent of mechanical exhaust; the balance shall be natural supply from surrounding spaces.
- c. Exhaust/Return:
a) Exhaust air quantity shall be the greater of the following:
1) A 4 minute rate of change.
2) Air quantity based on allowed temperature rise over weather air.
3) Automatic filter washer requirements.
b) Provide a minimum of 300 CFM exhaust to automatic filter washer hood or as specified by manufacturer.

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Air Filter Cleaning Shop

28 0

Criteria Sheet No: 41

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	MN	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	40°F

1.4 Air Quantity:
See 3.0.

- a. Rate of Change (min):
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
Aviation Suit Laundry (Ventilated)	14	D
Dry Cleaning and Tailor Shop	28	D
Dry Cleaning Shop	28	D
Laundry	14	D
Laundry Issue Room	14	D
Laundry Receiving Room	14	D
Marine Press Shop	28	D
Tailor Shop	28	D

3.0 SPECIAL REQUIREMENT:

3.1 Applicable to all spaces:

a) This criteria sheet is for ventilated laundry spaces only. Criteria Sheet 4J shall be used for new construction.

3.2 Applicable only to:

Dry Cleaning Shop
Dry Cleaning and Tailor Shop
Tailor Shop

a) Mechanical supply shall be between 50 and 90 percent of mechanical exhaust.

b) Exhaust shall be the greater of the following:

- 1) 500 CFM for each pressing machine
- 2) 1 minute rate of change

c) Locate two exhaust terminals between the dry cleaner and the dryer, one 12 inches above the deck (close to the dry cleaner) and the other on the overhead. Provide exhaust terminals 4 inches from the outlets of the dryer and spotting board arranged to exhaust directly from the equipment.

d) A grille type diffusing terminal with a minimum of 1000 CFM, discharging downward, shall be installed at each laundry press operator's working station.

e) An exhaust hood similar to Figure No. 48 shall be provided on all presses.

f) Provide an interlock between dry cleaning machine and exhaust system so that the dry cleaning machine cannot operate when the exhaust system is not operating.

3.3 Applicable only to:

Laundry Issue Room
Laundry Receiving Room

a) Mechanical supply shall be equal to that quantity necessary to balance the laundry exhaust or a four-minute rate of change, whichever is greater.

b) Exhaust shall be natural to the laundry. Where the four-minute rate of change applies, the air in excess of that required for laundry balancing shall be mechanically exhausted or used for balance elsewhere.

3.4 Applicable only to:

Aviation Suit Laundry
Laundry

a) Mechanical exhaust shall be equal to 115 percent of supply.

b) The laundry, including associated issue and receiving rooms, shall be served by independent supply and exhaust systems.

c) A grille type diffusing supply terminal with a minimum of 1000 CFM, discharging downward, shall be installed at each laundry press operator's working

Criteria Sheet No: 41 (continued)

station. All other supply terminals to be adjustable blast type.

d) For spaces containing more than one drier:
An exhaust terminal shall be located overhead in the vicinity of the driers. A lint arrestor in accordance with NAVSEA dwg 501-2423206 sized for 700-900 fpm velocity shall be installed in the drier exhaust system. The air quantity for the ship's exhaust terminal shall be not less than 150 percent of the tumbler dryer fan capacity. No filter or trap is to be installed in the ship's exhaust system.

For spaces containing only one drier:
An exhaust terminal shall be located overhead of the drier and as close to the drier as practicable. A riser with a nylon bag lint trap, similar to Figure No. 4C shall be connected to the tumbler drier exhaust. The air quantity shall be not less than 150 percent of the tumbler drier fan capacity. No filter or trap is to be installed in the ship's exhaust system.

e) An exhaust hood shall be provided on all presses.

f) Provide minimum supply air quantity based upon 0.7 minute rate of change.

g) Preheat mechanical supply air to 50°F.

Criteria Sheet No: 4J

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	NM	---	---
b. Exhaust/Return Air	M	---	---
See 3.3 for exception.			
c. System Classification	Z	---	---
d. Closure Classification	Z	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	90°F	P
b. Design Relative Humidity:	See 3.1.	---
c. Assumed Temperature:		40°F

1.4 Air Quantity:

See 3.0.

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization:

See 3.0.

2.0 APPLICABLE SPACE:

	ILLUM	NOISE
Aviation Suit Laundry (Air Conditioned)	14	0
Dry Cleaning Shop	28	0
Dry Cleaning and Tailor Shop	28	0
Laundry	14	0
Laundry Issue Room	14	0
Laundry Receiving Room	14	0
Marine Press Shop	28	0
Tailor Shop	28	0

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) This criteria sheet is for air conditioned laundry spaces only. Criteria Sheet 4I shall be used for ventilated laundries.

b) Design relative humidity may exceed 55%.

c) Space cooling shall be accomplished with a cooling coil on the supply system.

3.2 Applicable only to:

Dry Cleaning Shop
Dry Cleaning and Tailor Shop
Tailor Shop

a) Provide a minimum exhaust of 500 CFM for each pressing machine. An exhaust hood shall be provided on all presses similar to Figure No. 48.

c) Locate two exhaust terminals between the dry cleaner and the dryer, one 12 inches above the deck (close to the dry cleaner) and the other on the overhead. Provide exhaust terminals 4 inches from the outlets of the dryer and spotting board arranged so as to exhaust directly from the equipment.

d) Provide an interlock between dry cleaning machine and exhaust system. The exhaust system must be operating for the dry cleaning machine to operate.

e) A grille type diffusing terminal discharging downward with a minimum of 1000 CFM shall be installed over each laundry press operator's working station.

f) Provide independent watertight ductwork from each dry cleaning machine outlet to the weather. If the available pressure from the dry cleaning machine internal fan is insufficient, provide a booster fan interlocked with the drycleaning machine. The weather discharge from the dry cleaning machine shall be clear of walking areas and a minimum distance of 15 feet from the nearest ventilation intake.

3.3 Applicable only to:

Laundry Issue Room
Laundry Receiving Room

a) Exhaust shall be natural to the laundry. Air in excess of that required for laundry balancing shall be mechanically exhausted.

3.4 Applicable only to:

Laundry

a) The laundry, including associated issue and receiving rooms, shall be served by an independent supply system and an independent exhaust system.

Criteria Sheet No: 4J (continued)

b) For spaces containing more than one drier:
An exhaust terminal shall be located overhead in the vicinity of the dryers. A lint arrestor in accordance with NAVSEA dwg 501-2423206 sized for 700-900 fpm velocity shall be installed in the drier exhaust system. The air quantity for the ship's exhaust terminal shall be not less than 150 percent of the tumbler dryer fan capacity. No filter or trap is to be installed in the ship's exhaust system.

For spaces containing only one drier:
An exhaust terminal shall be located overhead of the drier and as close to the drier as practicable. A riser with a nylon bag lint trap, similar to Figure No. ___ shall be connected to the tumbler drier exhaust. The air quantity shall be not less than 150 percent of the tumbler drier fan capacity. No filter or trap is to be installed in the ship's exhaust system.

c) An exhaust hood shall be provided on all presses, similar to Figure No. 4B.

d) A minimum negative pressure of 0.25" W.G. shall be maintained in the laundry with the access doors shut.

e) A grille type diffusing terminal discharging downward with a minimum of 1000 CFM shall be installed over each laundry press operator's working station.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** F**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	75°F
b. Design Relative Humidity:	50%	50%
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:** ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Aviation Flotation Equipment Shop	28 D
Aviation Parachute Equipment Shop	28 D
Aviation Survival Equipment Shop	28 D

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

See 3.0

- a. Rate of Change (min): 6
- b. Supply:
See 3.0.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:**

Storage Battery Shop (Lead Acid)

ILLUM NOISE

28 0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) The exhaust air quantity shall be the greater of the following:

1. A six-minute rate of change
2. Air quantity to meet the cooling season design temperature, or
3. Volume to prevent the formulation of an explosive mixture based on the following formula:

$$V = (0.076)CN$$

Where:

V = Exhaust air quantity in CFM

C = Battery capacity in ampere-hours

N = Number of batteries

(0.076) = a constant in CFM per ampere-hour per battery.

b) If the exhaust air quantity from the storage battery shop exceeds 10 percent of the exhaust system air quantity, a non-sparking centrifugal fan (located outside the compartment) shall be used for the system.

c) Exhaust terminals shall be located over all battery charging racks to remove the air volume stated in a.3.

d) If enclosed battery racks with ventilation terminals are used, provide 75 CFM (minimum) of exhaust air from the top of the rack.

e) The power supply to battery chargers shall be interlocked with exhaust fan serving the compartment to prevent battery charging when the exhaust system is secured.

f) Exhaust air shall discharge directly to the weather.

g) If both acid type and alkaline type batteries are stowed in the same space, there shall be an air flow from the alkaline type stowage area to the acid type stowage area.

Criteria Sheet No: 4M

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) Exhaust terminals shall terminate nine inches above deck.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	NH	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	40°F

1.4 Air Quantity:

- a. Rate of Change (min): 10
- b. Supply: ---
- c. Exhaust/Returns: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

Dry Cleaning Material Tank Space 3 ---

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min): 4

b. Supply:

Supply air quantities are to be based on a temperature rise over weather air temperature or the minimum rate of change, whichever is greater.

c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Aviation Gun Cleaning Room	14 D
Aviation Gun System Shop	14 D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) If gasoline or other highly flammable solutions are used for cleaning, the ventilation system shall be designed as follows:

1. If the compartment exhaust exceeds 10 percent of the exhaust system air quantity, a non-sparking type centrifugal fan (located outside the compartment) shall be used for the exhaust system and shall discharge directly to the weather.

2. Supply terminals shall be installed in the overhead. Exhaust terminals shall be installed nine inches above the deck. Exhaust weather openings shall be six feet from other openings.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	2	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

- a. Rate of Change (min):
See 3.0.
- b. Supply: ---
- c. Exhaust/Return:
See 3.0.

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
Foundry	28	D
Lube Oil Filter Shop	28	D
Rubber and Plastic Shop	28	D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

None

3.2 Applicable only to:

Foundry

a) Exhaust quantity shall be based on 0.7-minute rate of change.

b) Provide hoods over all furnaces. The hood design shall be in accordance with the latest edition of "Industrial Ventilation - A Manual of Recommended Practice" by Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902.

3.3 Applicable only to:

Rubber and Plastic Shop

a) Provide an exhaust hood over the rubber mill. For guidance in the design and selection of acceptable hoods see "Industrial Ventilation - A Manual of Recommended Practice" by Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902.

b) The oven exhaust discharge shall be directed at and terminate within three inches of a ship's exhaust terminal. The exhaust quantity for the terminal shall be 150 percent of the oven exhaust discharge quantity.

c) Exhaust air quantity shall be the greater of the following:

1) A two-minute rate of change.

2) A quantity sufficient to satisfy oven exhaust discharge terminal outlined above.

3.4 Applicable only to:

Lube Oil Filter Shop

a) Mechanical exhaust shall be 150 percent of exhaust from ultrasonic cleaner. Exhaust from the ultrasonic cleaner shall be ducted to within 3 inches of an exhaust terminal.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	2	---
d. Closure Classification	---	2	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min): 6

b. Supply:

Supply air quantities are to be based on a temperature rise over weather air temperature or the minimum rate of change, whichever is greater.

c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**CO₂ Transfer Shop

28 0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Exhaust air terminals shall terminate nine inches above the deck.

Criteria Sheet No: 40

3.0 SPECIAL REQUIREMENTS

A 75 CFM (minimum) mechanical exhaust from a "(W)" system shall serve the battery charging racks. The replenishment air to the cooling coil shall be increased accordingly.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	U	---	---
d. Closure Classification	U	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

Alkaline Battery Shop

28 0

Criteria Sheet No: 42

1.0 GENERAL REQUIREMENTS:

The criteria contained in this page applies to those spaces which have a Micro-miniature (2M) Work Center.

1.1 Insulation Category: F

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	N	---	---
b. Exhaust/Return Air	N	---	---
c. System Classification	(W)	---	---
d. Closure Classification	(W)	---	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

Micro-Miniature Repair (2M) Work Center

ILLUM NOISE

28 D

3.0 SPECIAL REQUIREMENTS

3.1 Applicable to all spaces containing a 2M Work Center:

a) Each work station shall be provided with a Fume Extractor, Model 103, Lab Safety Supply, Jamesville, WI or equal. Each fume extractor terminal shall exhaust a minimum of 60 CFM.

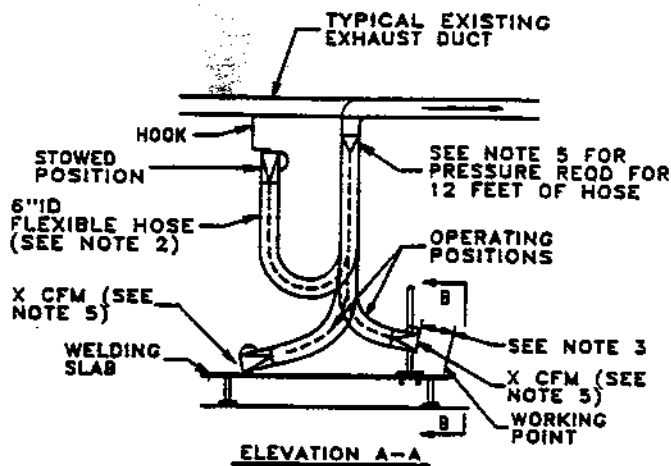
b) Exhaust terminals shall be provided at each work station or group of work stations, with the CFM being the larger of either 75 CFM or 25 CFM per work station.

c) Spaces containing a curing oven shall be provided with an air plenum located on the discharge/intake side of the curing oven. Supply and exhaust air quantity serving the plenum shall be based on the maximum air requirement for the oven. A bellmouth exhaust terminal from the ship's exhaust discharge shall be extended into the plenum and shall be directed at, and terminate within three inches of the exhaust terminal located at the top of the plenum. The oven supply intake shall be extended, and terminate in the plenum. Provide ductwork to the interior of the plenum and terminate supply discharge nine inches from the oven supply intake. Provide an access opening on the side of the plenum for air balancing and maintenance.

d) The curing oven shall be interlocked with the ship's exhaust system.

e) The exhaust fan serving the curing oven shall be centrifugal.

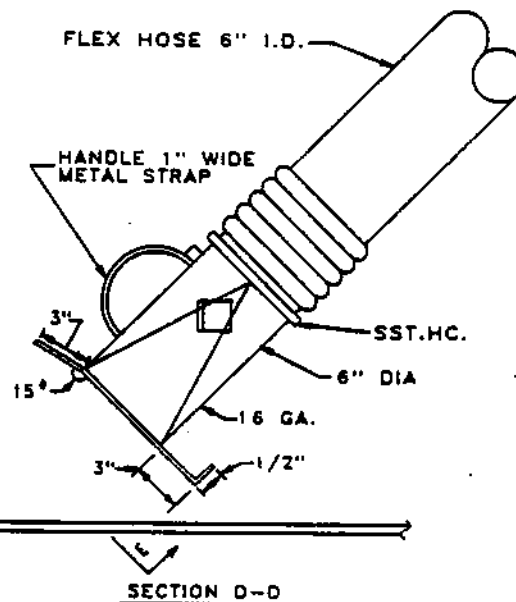
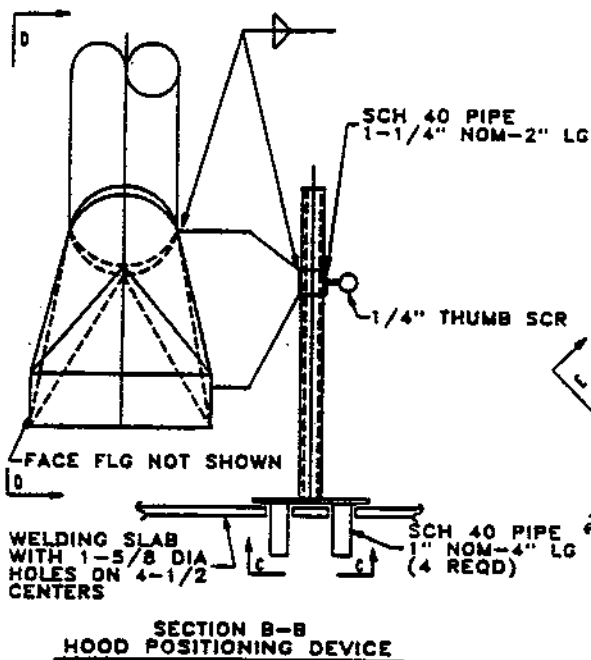
f) Exhaust air shall be discharges directly to the weather and shall not be discharged across walking areas.



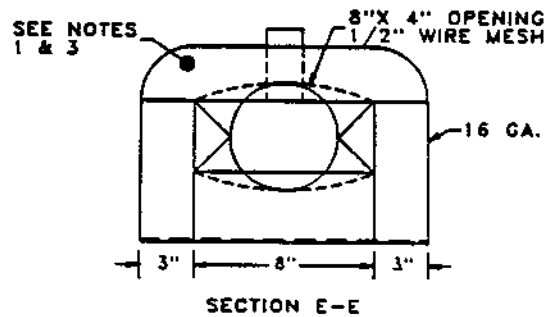
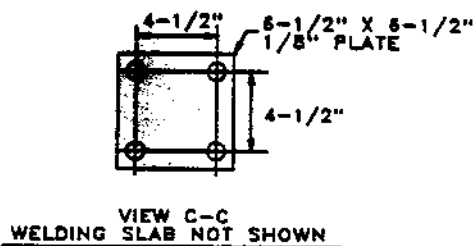
NOTES:

1. OPERATE EXHAUST SYSTEM AND COMPANION SUPPLY SYSTEM AT HIGH SPEED WHILE USING THIS HOOD.
2. FLEXIBLE TUBING CORP., FLEXFLYTE L9 OR EQUAL.
3. LOCATE OPENING OF THIS HOOD WITHIN 7-1/2 INCHES OF WORKING POINT.
4. FABRICATE LABEL PLATE WITH INSTRUCTIONS PER NOTES 1 & 3 AND INSTALL ON FACE OF HOOD. SEE SEC. "E-E".
5. PRESSURE REQUIRED AT CONNECTION POINT FOR STD. 12 FOOT PIECE OF L9 HOSE:

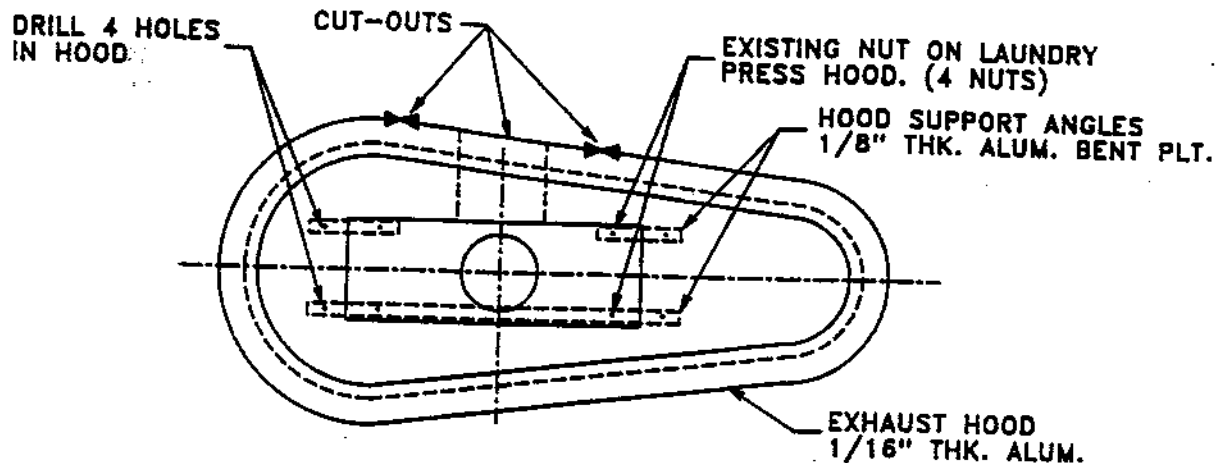
AIR QUANTITY (CFM)	PRESSURE REQ'D. (IN. WATER)
350	.40
400	.53
450	.66
500	.81



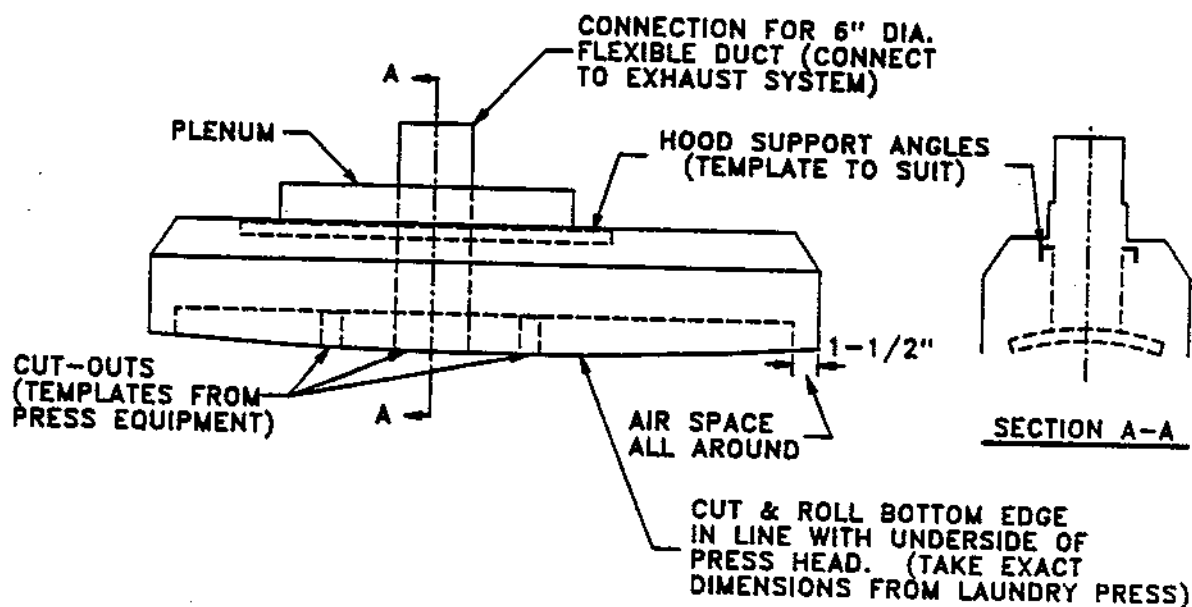
SECTION B-B
HOOD POSITIONING DEVICE



EXHAUST TERMINAL AND TYPICAL DUCT ARRANGEMENT FOR
WELDING SLAB
Figure No. 4A



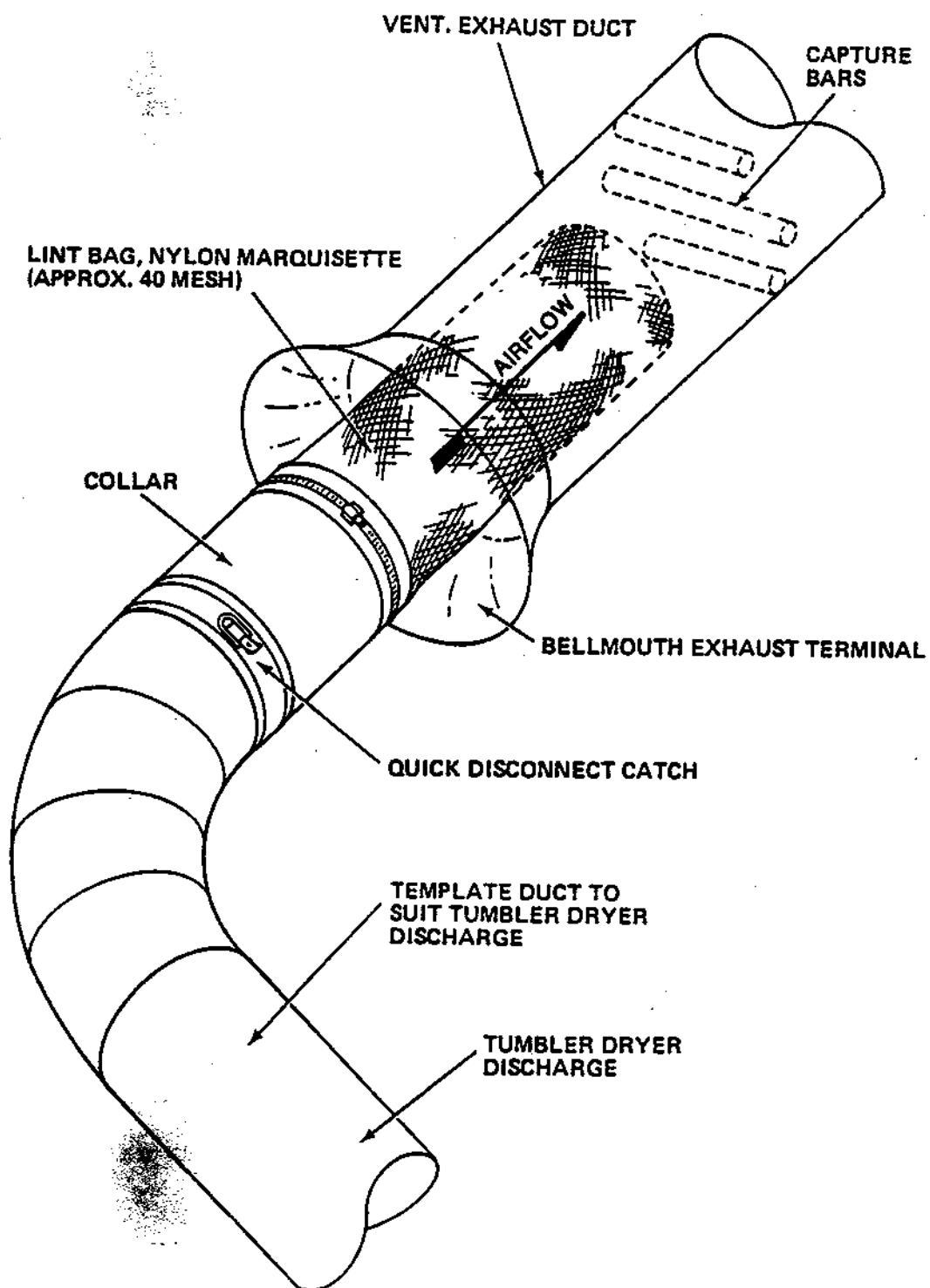
PLAN VIEW



ELEVATION

NOTE: HOOD TO EXHAUST 500 CFM.

EXHAUST HOOD FOR LAUNDRY PRESS
Figure No. 48



NYLON LINT BAG LINT TRAP
Figure No. 4C

Preface to Design Criteria - Group 5
Communication, Control, and Electronic Equipment Spaces

Communication, Control, and Electronic Equipment Spaces are generally air conditioned. It is important to provide an environment in these type of spaces which satisfies the temperature and humidity requirements of installed or anticipated electronic equipment as well as providing a thermal environment that is conducive to personnel performance.

APPLICABLE SPACES - GROUP 5

Compartment Name	Sheet No.
AEW and IFF Room	5A
AN/SPN-35 Radar Dome	5A
AN/SPN-41 Radome (Azimuth)	5G
AN/SPN-41 Radome (Elevation)	5G
AN/SPS-49 Cooling Room	5A
AN/SPS-49 Radar Room	5A
AN/SPS-55 MK 99 Transmitter Room	5A
Aegis Radar Room	5A
Aft Repair 3 & Secondary Damage Control Station	5A
Air Navigation Equipment Room	5A
Air Operations (CIC)	5A
Air Operations Office	5A
Air Warfare	5A
Aircraft Air Strg & Cooling Machinery Control Rm	5A
Aircraft Weapons Checkout Room	5A
Aircraft Weapons Movement Control Room	5A
Array Room	5A
Audio Amplifier Room	5A
Auxiliary Radio Room	5A
Aviation Ordnance Control Station	5A
Aviation Weapons Checkout Shop	5A
Aviation Weapons Control Computer Room	5D
Aviation Weapons Movement Control Room	5A
Aviation Weapons Movement Control Station	5A
Aviation Weapons Movement Control & Aviation Wpns	5A
Bathymograph Room	5A
CIC	5A
CIC Maintenance Area	5A
CIWS Control Room	5A
CIWS Control Room, Workshop and Storeroom	5A
CIWS Local Control Room	5A
CIWS Local Control and Equipment Room	5A
CSE	5A
Cargo Control Center	5A
Cargo Fuel Control Center	5A
Carrier Air Traffic Control Center	5A
Carrier Air Traffic Control Center (CIC)	5A
Central Control Station	5A
Central Control Station/D.C. Central	5A
Chart Room	5A
Communication On-Line Equipment Room	5A
Communication Technology Control Room	5A
Communications Center	5A
Communications Office	5A
Communications Room	5A
Computer Center	5A
Computer Central	5A
Computer Room	5A
Crypto Room	5A
Damage Control Central	5A
Debarcation Control Center	5A
Degaussing Room	5A
Degaussing Switchboard Room	5F

Detection And Tracking Area (CIC)	5A
Detection and Tracking and Weapons Control Room	5A
Director #3 Barbette	5A
Director Equipment Room	5A
Director Slip Ring Assembly Rm (Less Director #3)	5A
Display And Decision (CIC)	5A
Display and Decision and Surface Operations	5A
Dome Equipment Room	5A
Drone Control Equipment Room	5A
ECM Area (CIC)	5A
ECM Equipment Room	5A
ECM Room	5A
EW Room	5A
Electric Load Center	5A
Electronics Equipment Room	5A
Engineering Dept Office & Damage Control Central	5A
Flag Bridge	5A
Flag Briefing and Planning	5A
Flag Communication Annex	5A
Flag Display & Decision	5A
Flag EDP	5A
Flag Intelligence Office	5A
Flag Operations & Analysis	5A
Flag Plot	5A
Flight Control Station	5A
Flight Deck & Aviation Maintenance Control Center	5A
Flight Deck Amplifier Room	5A
Flight Deck Control & Aircraft Maint Control Ctr	5A
Flight Deck Control Station	5A
Flight Deck Control Annex	5A
Flight Deck Debarcation Control	5A
Flight Deck Equipment Room	5A
Flight Deck Lighting Control Station	5A
Fly Control	5A
Hangar Deck Control	5A
Helicopter Control Station	5A
Helicopter Direction Center	5A
Helix House	5C
IC and Gyro Room	5A
IC Switchboard Room	5A
IFF Equipment Room	5A
IRSTD Room	5A
JIC EDP Room	5A
Launcher Control Room	5A
Load Center Switchboard Room	5A
MK 56 GFCS Control Room	5A
MTACCS, EDP Room	5A
Meteorological Room	5A
Missile Weapons Control & Switchboard Computer Rm	5A
NIXIE Maintenance Equipment Room	5A
NSSMS Control & Equipment Room	5A
NSSMS Director Equipment Room	5A
NSSMS Equipment Room	5A
NSSMS Launcher Equipment Room	5A
NTDS Computer Room	5A
Optical Landing System Equipment Room	5A
Optical Landing ILARTS TV & Flight Deck Light Ctrl	5A
PLAT Camera Enclosure	5A
Pilot House (Enclosed)	5A
Pilot House (Open)	5B
Pump Room Control Room	5A
RAST-LSO Control Station	5A
Radar Equipment Room	5A
Radar Room	5A
Radar Switchboard Room	5A
Radar Transceiver Room	5A
Radar Transmitter Room	5A
Radio Central	5A
Radio Transmitter Room	5A
Secondary Conning Station	5D

Secondary Damage Control Station	5A
Secure Communications	5A
Secure Teletype Room	5A
Sheltered Bridge	5A
Signal Shelter (Enclosed)	5E
Signal Shelter (Open)	5B
Sonar Control Room	5A
Sonar Cooling Equipment Room	5A
Sonar Equipment Room	5A
Sonar Transducer Room	5A
Surface Lookout Station (Enclosed)	5E
Surface Lookout Station (Open)	5B
Switchboard Room	5A
TARTAR Launcher Control Room	5A
TFCC Remote Equipment Room	5A
Tactical Air Coordination Center	5A
Tactical Operations Plot	5A
Technical Operations Plot	5A
Television Control Room	5A
Television Studio	5A
UHF Radio Room	5A
VERTREP Control Station	5A
War Communications Annex	5A
War Room	5A
Weapons Coordination Center	5A
Weapons Direction Equipment Room	5A

Criteria Sheet No: 5A

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F

1.2 HVAC Treatment:

	A/C	VENT	BD
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperatures:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply:
Supply air quantity shall be based upon the greater of the following requirements:

- a. Replenishment air
b. Heat load

- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

In electronic control and equipment spaces, recirculation system return terminals shall be located near hot equipment that does not have an internal ventilation blower and within 6 inches of the discharge outlet of equipment provided with blowers that meet both the following conditions:

- a) Rated heat dissipation is 500 watts or greater.
- b) Air flow through the equipment has a temperature rise of 10°F or greater.

Terminals shall be arranged so as to prevent water or spray from entering the equipment and shall not be directly connected to the equipment internal ventilation system.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
AEW and IFF Room	14	A
AN/SPN-35 Radar Dome	---	---
AN/SPS-49 Cooling Room	7	D
AN/SPS-49 Radar Room	14	D
AN/SPS-55 MK 99 Transmitter Room	14	D
Aegis Radar Room	14	D
Aft Repair 3, And Secondary Damage Control Station	14	E
Air Navigation Equipment Room	14	D

Air Operations	14	A
Air Operations (CIC)	14	A
Air Operations Office	14	A
Air Warfare	14	A
Aircraft Air Starting and Cooling Machinery Control Room	14	E
Aircraft Weapons Checkout Room	14	A
Aircraft Weapons Movement Control Rm	14	A
Array Room	14	---
Audio Amplifier Room	14	A
Auxiliary Radio Room	14	A
Aviation Ordnance Control Station	14	A
Aviation Weapon Movement Control Station	14	A
Aviation Weapon Movement Control and Aviation Weapons	14	A
Aviation Weapons Checkout Shop	14	A
Aviation Weapons Movement Control Room	14	A
Bathymograph Room	14	A
CIC	28	A
CIC Maintenance Area	14	A
CIWS Control Room	28	A
CIWS Control Room, Workshop, and Storeroom	14	A
CIWS Local Control Room	14	A
CIWS Local Control and Equipment Room	14	A
CSER	14	A
Cargo Control Center	14	A
Cargo Fuel Control Center	21	A
Carrier Air Traffic Control Center	14	A
Carrier Air Traffic Control Center (CIC)	14	A
Central Control Station	21	A
Central Control Station/D.C. Central Chart Room	21	A
Communication On-Line Equipment Room	14	A
Communication Technology Control Room	28	A
Communications Center	28	A
Communications Office	28	A
Communications Room	14	A
Computer Center	28	A
Computer Central	28	A
Computer Room	14	A
Crypto Room	14	A
Damage Control Central	28	A
Debarcation Control Center	28	A
Degaussing Room	14	D
Detection And Tracking Area (CIC)	14	A
Detection and Tracking and Weapons Control Room	14	A
Director #3 Barbette	42	D
Director Equipment Room	7	---
Director Slip Ring Assembly Room (Less Director #3)	42	D
Display And Decision (CIC)	14	A
Display and Decision and Surface Operations	14	A
Dome Equipment Room	14	E
Drone Control Equipment Room	14	A
ECM Area (CIC)	14	A
ECM Equipment Room	14	A
ECM Room	14	A
EW Room	14	E
Electric Load Center	14	D
Electronics Equipment Room	14	D
Engineering Dept Office & DC Central	28	A
Flag Bridge	14	A
Flag Briefing and Planning	14	A
Flag Communication Annex	14	A
Flag Display & Decision	14	A
Flag EDP	28	A
Flag Intelligence Office	14	A

Criteria Sheet No: 5A (Continued)

Flag Operations & Analysis	14	A
Flag Plot	14	A
Flight Control Station	14	A
Flight Deck & Aviation Maintenance Control Center	14	A
Flight Deck Amplifier Room	14	D
Flight Deck Control & Aircraft Maintenance Control Center	14	A
Flight Deck Control Annex	14	A
Flight Deck Control Station	14	A
Flight Deck Debarkation Control	14	A
Flight Deck Equipment Room	14	A
Flight Deck Lighting Control Station	14	A
Fly Control	14	A
Hangar Deck Control	14	A
Helicopter Control Station	14	A
Helicopter Direction Center	14	A
IC and Gyro Room	14	A
IC Switchboard Room	14	E
IFF Equipment Room	14	D
IRSTD Room	5	---
JIC EDP Room	28	A
Launcher Control Room	28	A
Load Center Switchboard Room	7	D
MK 56 GFCS Control Room	14	A
MTACCS, EDP Room	28	A
Meteorological Room	14	A
Missile Weapons Control and Switchboard Computer Room	14	A
NIXIE Maintenance Equipment Room	14	A
NSSMS Control & Equipment Room	14	A
NSSMS Director Equipment Room	14	D
NSSMS Equipment Room	14	A
NSSMS Launcher Equipment Room	14	A
NTDS Computer Room	14	A
Optical Landing System Equipment Room	14	A
Optical Landing, ILARTS TV & Flight Deck Lighting Control Room	14	A
PLAT Camera Enclosure	14	---
Pilot House (Enclosed)	14	A
Pump Room Control Room	28	E
RAST-LSO Control Station	14	A
Radar Equipment Room	14	D
Radar Room	14	D
Radar Switchboard Room	14	D
Radar Transceiver Room	28	A
Radar Transmitter Room	14	A
Radio Central	14	A
Radio Transmitter Room	14	D
Secondary Damage Control Station	14	A
Secure Communications	14	A
Secure Teletype Room	14	A
Sheltered Bridge	14	A
Sonar Control Room	14	C
Sonar Cooling Equipment Room	14	D
Sonar Equipment Room	14	A
Sonar Transducer Room	---	---
Switchboard Room	14	E
TARTAR Launcher Control Room	14	A
TFCC Remote Equipment Room	14	A
Tactical Air Coordination Center	28	A
Tactical Operations Plot	14	A
Technical Operations Plot	14	A
Television Control Room	14	A
Television Studio	14	C
UHF Radio Room	14	A
VERTREP Control Station	14	A
War Communications Annex	14	A

War Room	14	A
Weapons Coordination Center	14	A
Weapons Direction Equipment Room	14	A

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

- a) Add 15 percent to equipment heat dissipation to allow for future equipment additions. In calculating the heating season requirements use one-third of the cooling season equipment heat dissipation as a heat gain. (Do not include 15 percent future load allowance.)

3.2 Applicable only to:

Pilot House

- a) Pilot House shall be served by an independent system.

3.3 Applicable only to:

Radio Transmitter Room

CIC

Communications Center

- a) Load factor for equipment shall be 100 percent.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** C**1.2 HVAC Treatment:**

	A/C	VFNT	BD
a. Supply Air	---	---	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	55°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:** ---**2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
Pilot House (Open)	7	---
Signal Shelter (Open)	---	---
Surface Lookout Station (Open)	---	---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) Heating to be provided by convection heaters (electric or steam).

None

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	105°F	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:ILLUM NOISE

Helix House

7 ---

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NH	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:**ILLUM NOISE

Secondary Conning Station

7 A

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	H	---
b. Exhaust/Return Air	---	NH	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

Cooling Season	Heating Season
----------------	----------------

a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min): 6

b. Supply:

Supply air quantities are to be based on the allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater.

c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural exhaust, if used, shall be to adjacent spaces or to the weather.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:**ILLUM NOISE

Signal Shelter (Enclosed)	7 A
Surface Lookout Station (Enclosed)	7 A

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	120°F	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Degaussing Switchboard Room

7 D

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category:

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	---	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

The exhaust from the radome shall be via the radome door.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
AN/SPN-41 Radome (Azimuth)	---	---
AN/SPN-41 Radome (Elevation)	---	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

- a) Each radome shall have one L1A1W6 fan.
- b) The fan weather opening shall be provided with a manually operated spraytight cover.
- c) The fan shall be located so as to minimize RF interference and to prevent short circuiting with the natural exhaust through the radome door.

**Preface to Design Criteria - Group 6
Berthing, Messing, Office and Public Spaces**

This group of spaces support ship personnel functions such as eating, sleeping, lounging, etc. Since it is important to provide a comfortable and habitable environment, these spaces are air conditioned. Due to high concentration of personnel in some of these spaces there are special requirements related to cooling load calculation and replenishment air.

APPLICABLE SPACES - GROUP 6

Compartment Name	Sheet No.
Air Terminal	6A
Air Terminal Waiting Room	6A
Berthing	6A
Brig Lobby	6A
Brig Vestibule	6A
Bunkroom	6A
Cabin	6A
Cell	6A
Chapel	6A
Conference Room	6A
Counselors Room	6A
Deck Office (With weather access)	6B
Detention Cell	6A
Dressing Room	6A
FM Radio Station	6A
Group Living Space	6A
Library	6A
Living Space	6A
Lounge	6A
Messroom	6A
Office (Deck)	6A
Office (General)	6A
Office Lobby	6A
Physical Fitness Room	6A
Recreation Room	6A
Registered Publications Office	6A
Retail Clothing Store	6A
Sea Cabin	6A
Ships Aircraft Work Center	6A
Soda Fountain	6A
Stateroom	6A
Study	6A
Training Room	6A
Wardroom	6A

Criteria Sheet No: 6A

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NH	---	---
c. System Classification	Z	---	---
d. Closure Classification	Z	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
Air Terminal	14	A
Air Terminal Waiting Room	14	A
Berthing	7	B
Brig Lobby	14	B
Brig Vestibule	14	B
Bunkroom	7	B
Cabin	7	B
Cell	14	B
Chapel	14	C
Conference Room	28	C
Counselors Room	14	A
Detention Cell	14	B
Dressing Room	14	B
FM Radio Station	14	A
Group Living Space	14	B
Library	28	C
Living Space	14	B
Lounge	28	B
Messroom	28	B
Office (Deck)	28	A
Office (General)	28	A
Office Lobby	14	A
Physical Fitness Room	28	B
Recreation Room	28	B
Registered Publications Office	14	A
Retail Clothing Store	14	A
Sea Cabin	7	B
Ships Aircraft Work Center	14	B
Soda Fountain	28	B

Stateroom	7	B
Study	7	B
Training Room	28	B
Wardroom	28	B

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

3.2 Applicable only to:

Messroom

a) Add 30 BTU sensible heat and 30 BTU latent heat per hour per man to the heat load as an allowance for heat dissipation from food.

3.3 Applicable only to:

Stateroom

a) Use maximum seating arrangements when calculating personnel load.

3.4 Applicable only to:

Wardroom

a) Add 30 BTU sensible heat and 30 BTU latent heat per hour per man to the heat load as an allowance for heat dissipation from food.

b) Add 270 BTU per hour sensible heat and 515 BTU per hour latent heat for one attendant.

c) Wardroom shall have positive pressure relative to the wardroom pantry.

3.5 Applicable only to:

Registered Publications Office

a) No ductwork shall pass through this space.

3.6 Applicable only to:

Brig Lobby
Brig Vestibule

a) Where washroom facilities are provided install recirculation system return over washroom area.

3.7 Applicable only to:

Berthing
Bunkroom
Group Living Space
Living Space

a) No terminal shall be located over a berth or berth unit.

b) Terminals shall not discharge towards a berth.

Criteria Sheet No: 6A (continued)

c) Each berth shall be provided with an individual fan and air distribution assembly as shown on Long Beach Naval Shipyard drawing 612-5606260 - "Modular Berth Fan Unit".

d) Cooling load calculation and replenishment air shall be based upon full complement in sleeping and recreation lounge area.

e) If negative heat loads are obtained because of deductions for lights and personnel, provide reheaters for 65°F delivery of replenishment air.

3.8 Applicable only to:

Cabin
Sea Cabin
Study

a) Use maximum seating arrangements when calculating personnel heat load.

3.9 Applicable only to:

Cell
Detention Cell

a) Terminals serving cells shall terminate at space boundaries.

3.10 Applicable only to:

Listed spaces with Troop personnel

a) Damage control classification shall be (U).

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	See 3.0	---
b. Exhaust/Return Air	M	---	---
c. System Classification	2	---	---
d. Closure Classification	2	---	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):	6
b. Supply: ---	
c. Exhaust/Return: ---	

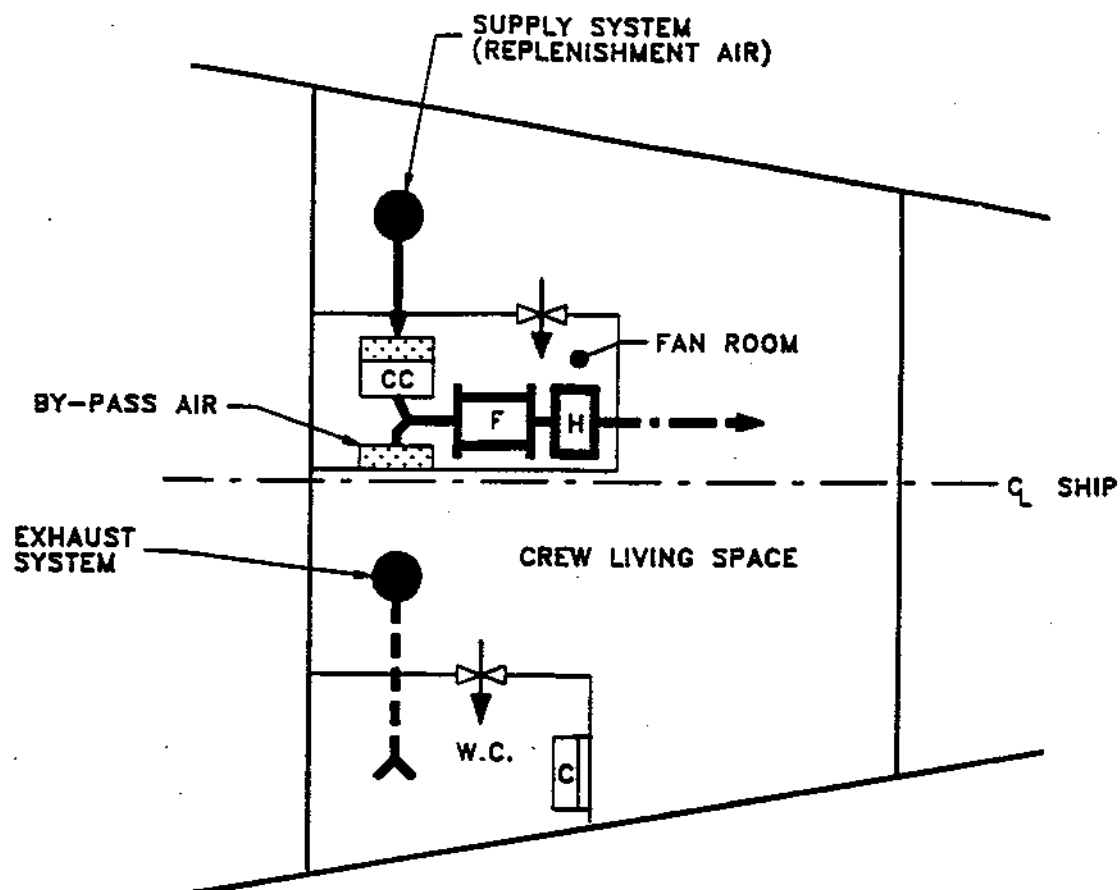
1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Deck Office (With weather access)	28 E
Flight Deck Crash Crew Shelter	14 D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) If air conditioning is impractical, these spaces shall be ventilated. Supply air quantity are to be based on a 10°F rise over weather air temperature or the minimum rate of change, whichever is greater.

b) Spaces shall have independent air conditioning systems or shall be grouped together separate from other air conditioning systems.



NOTE: THE RELATIVE LOCATION OF EQUIPMENT AS INDICATED ABOVE IS PREFERRED.

AIR CONDITIONING CREW LIVING SPACE
Figure No. 6A

**Preface to Design Criteria - Group 7
Washroom and Locker Room Facilities**

This group of spaces support personnel sanitary needs. These spaces are ventilated to remove odors and moisture.

APPLICABLE SPACES - GROUP 7

Compartment Name	Sheet No.
Bath (all except Ward & Quiet Room)	7A
Fresh and Salt Water Decontamination Station	7A
Ladies Room	7A
Locker Room (Personnel)	7B
Shower Space	7A
Toilet Space	7A
Washroom	7A
Watercloset Space	7A

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Bath (all except Ward & Quiet Room)	14	---
Fresh and Salt Water Decontamination Sta.	7	---
Ladies Room	14	---
Shower Space	3	---
Toilet Space	14	---
Washroom	14	---
Watercloset Space	14	---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) Heating shall be provided by convection heaters.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: D****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	75°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

- a. Rate of Change (min): See Exhaust/Return (1.4c.)

- b. Supply: ---

c. Exhaust/Return:

If natural supply is taken from adjacent ventilated areas or from non-cooled passages, the quantity of exhaust air shall be based on a six minute rate of change plus an allowance of 50 CFM for each shower and 25 CFM each for other fixtures. If natural supply is taken from surrounding spaces that are air-conditioned, exhaust shall be based on a four minute rate of change. If available natural supply from passages in air conditioned areas is not sufficient to meet exhaust requirements, increase replenishment air to air conditioned spaces. If available natural supply from passages in ventilated areas or from non-cooled passages is not sufficient to meet exhaust requirements, provide necessary mechanical supply to space from which natural supply to washroom is taken.

1.5 Air Distribution/Circulation:

Ventilation shall be arranged to circulate the air thoroughly. Where the size and arrangement of the space is such that a natural supply opening high in a bulkhead will bypass air to the exhaust terminal, a baffle shall be provided to divert the air downward or the opening shall be located in the lower part of the bulkhead. Exhaust terminals shall be located to avoid bypassing air through an open access door.

The number of terminals shall be kept to a minimum, except that one terminal shall be provided for each group of showers, and each group of waterclosets.

1.6 Air Pressurization: ---

None

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category:

1.2 HVAC Treatments:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	NM	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): 6
- b. Supply:
Supply air quantities are to be based on the allowable temperature over weather air temperature or the minimum rate of change, whichever is greater.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural exhaust, if used, shall be to adjacent spaces or to the weather.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:ILLUM NOISE

Locker Room (Personnel)

7 ---



**Preface to Design Criteria - Group 8
Commissary Spaces**

This group of spaces supports food storage, preparation, cooking, garbage disposal, and dishwashing.

APPLICABLE SPACES - GROUP 8

Compartment Name	Sheet No.
Bakery	8A
Bakery Storeroom	8E
Bread Room	8E
Butcher Shop	8B
Commanding Officer Pantry	8B
Galley (air conditioned)	8C
Galley (ventilated)	8A
Garbage Disposal Room	8A
Ice Cream Bar	8B
Ice Cream Making Room	8A
Meat Preparation Room or Area	8B
Pantry (air conditioned)	8C
Pantry (ventilated)	8A
Scullery	8D
Ships Store	8B
Snack Bar	8B
Unit Commander Pantry	8B
Utensil Wash Area	8A
Vegetable Preparation Room or Area	8B
Vending Machine Area	8B
Wardroom Pantry	8B

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VEPT	80
a. Supply Air	---	See 3.0	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	2	---
d. Closure Classification	---	2	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	50°F

1.4 Air Quantity:

- a. Rate of Change (min):
See 3.0.
- b. Supply:
See 3.0.
- c. Exhaust/Return:
See 3.0.

**1.5 Air Distribution/Circulation:
See 3.0.****1.6 Air Pressurization:
See 3.0****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Bakery	28	0
Bakery Storeroom	3	---
Bread Room	3	---
Galley (ventilated)	28	0
Garbage Disposal Room	7	0
Ice Cream Making Room	28	0
Pantry (ventilated)	28	0
Utensil Wash Area	14	0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:
None****3.2 Applicable only to:**

- Garbage Disposal Room

a) Use a one-minute rate of change or 750 CFM, whichever is less.

b) Natural supply shall be taken from surrounding spaces.

3.3 Applicable only to:

Bakery
Galley (ventilated)
Pantry (ventilated)

a) Ventilation grease interceptor hoods in accordance with NAVSEA dwg. 1749099 shall be provided over all ranges, griddles, deep fat fryers, steam kettles, fry kettles, roast ovens, donut fryers, conveyor broilers, and bake ovens except where hot top ranges are either not involved or are combined with lighter duty equipment. Exhaust terminals shall be provided over coffee urns. Canopy hoods shall be provided over all steam tables.

b) Hood air quantities shall be based on the greater of the following:

1. 250 CFM per linear foot of grease interceptor hood slot over all griddles, deep fat fryers, and donut fryers; plus 150 CFM per linear foot of grease interceptor hood slot for all other hoods; plus 150 CFM per square foot of canopy hoods.

2. Six minute rate of change.

3. 60 CFM/KW input of all electrical equipment plus 12 CFM/gal. capacity of all steam jacketed kettles plus 30 CFM/sq. ft. of actual steam table well surface.

c) Mechanical supply shall be 50 to 90 percent of exhaust, with the balance in natural supply from surrounding spaces. Natural supply from air conditioned areas shall not exceed 10 percent of the exhaust air quantity.

d) Where practical, provide independent supply and exhaust systems for galleys.

e) Supply and exhaust systems serving galleys shall have single speed fans.

3.4 Applicable only to:

Ice Cream Making Room

a) When air-cooled refrigeration condensing units are installed, provide mechanical ventilation calculated on the basis of 1200 CFM per ton of refrigeration capacity or six-minute rate of change, whichever is greater. Exhaust terminals shall be located in the overhead directly over compressors.

Criteria Sheet No: 8A (continued)

- b) In spaces where water-cooled refrigeration condensing units are installed or where no condensers are installed in the space, provide mechanical ventilation based on a six-minute rate of change.

3.5 Applicable only to:

Utensil Wash Area

- a) Exhaust air quantity shall be based on a six-minute rate of change.
- b) A maximum of 100 CFM of air shall be natural supply; the balance mechanical supply.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** F**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	NM	---	---
b. Exhaust/Return Air	NM	---	---
c. System Classification	Z	---	---
d. Closure Classification	Z	---	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:	
a. Rate of Change (min):	---
b. Supply:	---
c. Exhaust/Return:	See 3.0.

1.5 Air Distribution/Circulation:
See 3.0.**1.6 Air Pressurization:** ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Butcher Shop	28	D
Commanding Officer Pantry	28	D
Ice Cream Bar	28	D
Meat Preparation Room or Area	28	D
Ships Store	28	D
Snack Bar	28	D
Unit Commander Pantry	28	D
Vegetable Preparation Room or Area	28	D
Vending Machine Area	14	---
Wardroom Pantry	21	B

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Air conditioning systems serving these spaces shall not serve spaces such as offices, living spaces, or control spaces, nor shall return air from these spaces pass through such spaces.

3.2 Applicable only to:

Ice Cream Bar
Ships Store
Snack Bar
Vending Machine Area

a) Natural return, if used, shall be via surrounding passages.

3.4 Applicable only to:

Commanding Officer Pantry
Unit Commander Pantry

a) Natural supply, if used, shall be from surrounding spaces or an air conditioned passage.

b) The air from the range hood may be returned to the recirculation system or exhausted as required.

c) Ventilation grease interceptor hoods in accordance with NAVSEA dwg. 1749099 shall be provided over all ranges, griddles, deep fat fryers, steam kettles, fry kettles, roast ovens, donut fryers, conveyor broilers, and bake ovens except where hot top ranges are either not involved or are combined with lighter duty equipment. Exhaust terminals shall be provided over coffee urns. Canopy hoods shall be provided over all steam tables.

d) Exhaust air quantity shall be as follows:

1. 250 CFM per linear foot of grease interceptor hood slot over all griddles, deep fat fryers, and donut fryers; plus 150 CFM per linear foot of grease interceptor hood slot for all other hoods; plus 150 CFM per square foot of canopy hoods.

3.5 Applicable only to:

Wardroom Pantry

a) Provide ventilation grease interceptor hood of the pass over type as indicated on NAVSEA dwg. 1749099 over the griddle. Hood air quantity shall be 150 CFM per linear foot of hood intake slot. Recirculating system return air shall be 100 percent of hood air quantity, and shall be returned through the hood. The pantry shall be negative pressure to the wardroom.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatments:**

	A/C	VENT	BO
a. Supply Air	M/N	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	Z	---	---
d. Closure Classification	Z	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply:
 1. Mechanical supply air (from the weather) shall be 90 percent of the hood air quantities, with the other 10 percent as a natural supply from surrounding spaces.
 2. The replenishment air shall be 10 percent of the hood air quantities unless increased to accommodate exhaust requirements (see 1.4c) and shall be injected directly into the return air duct.
- c. Exhaust/Return:
 1. See 3.0 for the method of determination of total exhaust air requirements.
 2. The air exhausted from the hoods to the weather shall be a minimum of 20 percent of the total hood air quantities. Actual quantity of exhaust air to the weather shall be determined by 3.0. Return air from hoods shall therefore be a maximum of 80 percent.
 3. The exhaust from the deep fat fryer and griddle shall be exhausted to the weather via a separate exhaust system. All other hood exhaust may be recirculated.
 4. If the air exhausted from the deep fat fryer exceeds 20 percent (as a result of hood requirements per 3.0) of the required exhaust hood air requirement, (thereby increasing the 20 percent exhaust air and decreasing the 80 percent return air), then the replenishment air required shall be increased to suit

5. If the air required to be exhausted from the deep fat fryer and griddle, is less than the 20 percent exhaust air minimum, then air from the hood(s) over the grills, convection ovens or from any other terminal shall be added to the exhaust from the deep fat fryer and griddle hood so that the total discharged to the weather is 20 percent.

1.5 Air Distribution/Circulation:

a) Multi-vent terminals shall be operated at a maximum of 1000 CFM per terminal.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Galley (air conditioned)	28 D
Pantry (air conditioned)	28 D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Ventilation grease interceptor hoods in accordance with NAVSEA dwg. 1749099 shall be provided over all ranges, griddles, deep fat fryers, steam kettles, fry kettles, roast ovens, donut fryers, conveyor broilers, and bake ovens except where hot top ranges are either not involved or are combined with lighter duty equipment. Exhaust terminals shall be provided over coffee urns. Canopy hoods shall be provided over all steam tables.

b) Hood air quantities shall be based on the following criteria:

1. 150 CFM per linear foot of slot for ventilation grease interceptor hoods, except 250 CFM per linear foot of slot for ventilation grease interceptor hoods over deep fat fryers and griddles.

2. 150 CFM per square foot of face area for canopy hoods.

c) Humidity control shall be provided by installation of a humidistat to activate the heater(s) when the room humidity exceeds 55 percent.

3.2 Applicable only to:**Galley (air conditioned)**

a) Supply and exhaust systems serving the galley shall have single speed fans and shall serve only commissary spaces.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	NH	---	---
b. Exhaust/Return Air	H	---	---
c. System Classification	2	---	---
d. Closure Classification	2	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	90°F	65°F
b. Design Relative Humidity:	See 3.1d	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply:
The natural supply quantity from surrounding spaces shall be between 5 and 15 percent of the exhaust air quantities.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Scullery

28 0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Heat dissipation of scullery equipment and their operating load factors shall be obtained for air conditioning load calculations.

b) Three exhaust branches shall be provided for sculleries fitted with size 60-20 and larger dishwashing machines. Two branches shall terminate in the dishwashing machine hoods located at the feed and discharge ends of the dishwashing machine; the third branch shall terminate in the overhead between the hoods. In sculleries fitted with size 50 SMT and smaller dishwashing machines, a single terminal, capable of exhausting the total exhaust for the space shall be provided in the overhead, close to the discharge end of the dishwasher.

c) The exhaust quantities are:

Dishwashing Machine Size	Overhead Terminal CFM	Washer Feed Hood CFM	Washer Discharge Hood CFM
250-20	1500	750	750
185-20	1350	750	750
135-20	1200	700	700
85-20	550	475	475
60-20	300	475	475
50-20	500	---	---

d) Design relative humidity may exceed 55%.

e) The scullery shall be air conditioned with a cooling coil on the supply air system.

Criteria Sheet No: 8E

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment: See 3.0

	A/C	VENT	BO
a. Supply Air	---	NM	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	50°F

1.4 Air Quantity:

- a. Rate of Change (min): 10
- b. Supply:
Natural supply, if used, shall be taken from adjacent spaces.
- c. Exhaust/Return:

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 <u>APPLICABLE SPACES:</u>	<u>ILLUM</u>	<u>NOISE</u>
Bakery Storeroom	3	---
Bread Room	3	---

3.0 SPECIAL REQUIREMENTS

3.1 Applicable to all spaces

These spaces are not usually ventilated as the prevailing temperature in each space is adequate for its intended use. However, spaces that are penetrated by untrunked catapult or main steam piping, that is not of all welded construction or has traps or other fittings, shall have a minimum 10 minute rate of change.

Preface to Design Criteria - Group 9
Medical and Dental Spaces

Medical and dental spaces are generally air conditioned except for storerooms and baths which are ventilated. Operating rooms and surgical dressing rooms have numerous special requirements such as pressurization. Most spaces, beyond their primary functions, can be converted to assume different space roles, i.e. administrative, recreational, or other routine medical and dental related activities. For example, possible usages of Casualty Collection and Assembly Area are: a waiting room for a medical or a dental treatment, a physical examination room, a treatment room, a training center, a lounge, or a recreation area. This requires the HVAC criteria to be flexible enough to accommodate a secondary compartment function.

APPLICABLE SPACES - GROUP 9

Compartment Name	Sheet No.
Anesthetist Work Room	9A
Audiometric Test Equipment Room	9A
Audiometry Room	9A
Bacteriological Laboratory	9A
Battle Dressing Station	9A
Battle Dressing Storeroom	9F
Biomedical Repair Laboratory	9A
Blood Bank	9A
Cast Room	9E
Casualty Collection And Assembly Area	9A
Central Supply and Sterilization Room	9A
Clinical Laboratory	9A
Consultation Room	9A
Dark Room (Eye Exam)	9A
Dental Apparatus Room	9B
Dental Ceramic Laboratory	9B
Dental Clinic	9B
Dental Operating Room	9B
Dental Prosthetic Laboratory	9B
Dental Recovery Room	9B
Dental Storeroom	9F
Dental Waiting Area	9B
Diet Pantry	9A
Eye Examination Range	9A
Eye Range Room	9A
Eye, Ear, Nose & Throat Treatment & Aviation Exam	9A
Frozen Blood Storage	9A
Intensive Care Quiet Room	9E
Intensive Care Unit	9E
Intensive Care Unit Bath	9D
Isolation Quiet Room	9E
Isolation Quiet Room Bath	9D
Medical Accounting	9A
Medical Apparatus Room	9G
Medical Consultation Room	9A
Medical Department Bath	9D
Medical Department Office	9A
Medical Locker	9F
Medical Narcotic and Security Storeroom	9A
Medical Property and Accounting Office	9A
Medical Records Office	9A
Medical Storeroom	9F
Medical Treatment Room	9A
Morgue	9A
Nursing Center	9A
Operating Room	9C
Oral Hygiene Room	9B

Pharmacy	9A
Physiotherapy Room (Dry)	9E
Physiotherapy Room (Wet)	9E
Post-Op Recovery and Intensive Care Unit	9E
Preventive Dentistry Room	9B
Quiet Room	9E
Quiet Room Bath	9D
Scrub Room	9D
Secure Drug Storeroom	9A
Sterilizing Room	9A
Surgical Dressing Room	9A
Surgical Dressing Room (on AM, CV, CVH, LHA, LPD, LPH, LND only)	9C
Surgical Pre-Op Holding	9A
Utility Room	9G
Ward	9E
Ward Bath	9D
X-Ray Dark Room	9A
X-Ray Room	9A

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NH	---	---
c. System Classification	See 3.0	---	---
d. Closure Classification	See 3.0	---	---

	Cooling Season	Heating Season
a. Design Temperature:	80°F	70°F
b. Design Relative Humidity:	55% See 3.6	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization:
See 3.2**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Anesthetist Work Room	28	B
Audiometric Test Equipment Room	14	B
Audiometry Room	14	C
Bacteriological Laboratory	42	A
Battle Dressing Station	14	A
Biomedical Repair Laboratory	42	A
Blood Bank	28	A
Casualty Collection And Assembly Area	28	D
Central Supply and Sterilization Room	28	A
Clinical Laboratory	42	A
Consultation Room	28	A
Dark Room (Eye Exam)	14	B
Diet Pantry	14	D
Eye Examination Range	14	B
Eye Range Room	28	B
Eye, Ear, Nose & Throat Treatment and Aviation Examining Room	28	B
Frozen Blood Storage	28	A
Medical Accounting	28	A
Medical Consultation Room	28	A
Medical Department Office	28	A
Medical Narcotic & Security Storeroom	21	D
Medical Property and Accounting Office	28	A
Medical Records Office	28	A
Medical Treatment Room	42	C
Morgue	14	A
Nursing Center	28	A

Pharmacy	42	A
Secure Drug Storeroom	14	B
Sterilizing Room	28	A
Surgical Dressing Room	42	A
Surgical Pre-Op Holding	28	B
X-Ray Dark Room	28	A
X-Ray Room	28	B

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) Offices shall be served by a "W" system when they are located in the hospital area; otherwise by a "Z" system. All other spaces shall be served by a "W" system.

3.2 Applicable only to:**Bacteriological Laboratory**

- a) A negative pressure (minimum 0.25 inches of water) shall be maintained when access doors are closed.
- b) A HEPA filter(s) preceded by a Navy standard prefilter(s) shall be fitted in the branches of the recirculation and the exhaust systems serving this space. If the exhaust filter is located outside of the space, all ductwork between the space and the filter shall be of watertight construction. The HEPA filter shall have an efficiency of 99.97 percent on 0.3 micron DOP smoke test.
- c) The air from the Bacteriological Laboratory shall not be recirculated. The total supply air quantity shall be exhausted via a "(U)" exhaust system. The exhaust shall be discharged clear of any manned areas or supply air inlets.

3.3 Applicable only to:**Eye, Ear, Nose & Throat Treatment and Aviation Examining Room**

- a) The recirculation system supplying these spaces shall have HEPA type filter(s) of 99.97 percent efficiency on a 0.3 micron DOP smoke test.

3.4 Applicable only to:**X-Ray Darkroom**

- a) Darkrooms shall be provided with mechanical exhaust ventilation equal to the air conditioning quantity supplied.
- b) A terminal shall exhaust heated air directly from film dryer in X-Ray Darkroom to the weather.

3.5 Applicable only to:**Medical Narcotic and Security Storeroom
Secure Drug Storeroom**

- a) Air Conditioning ducts shall be of watertight construction for at least 4 feet within the space, with at least one 90° elbow in the watertight section, and shall not be larger than 6-inch diameter. Natural exhaust shall be through a 6-inch diameter, 12-inch long watertight duct with a 90° elbow within the space.

Criteria Sheet No: 9A (continued)

3.6 Applicable only to:

Sterilizing Room

- a) The HVAC system supplying this space shall have a HEPA filter(s) of 99.97 percent efficiency on a 0.3 micron DOP smoke test.
- b) An exhaust hood or register shall be installed over the steam sterilizer.
- c) Relative humidity in the sterile supplies storage area shall not exceed 50 percent.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NM	See 3.2	---
c. System Classification	See 3.0	---	---
d. Closure Classification	See 3.0	---	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	80°F	70°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization:
See 3.2**2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
Dental Apparatus Room	14	D
Dental Ceramic Laboratory	42	A
Dental Clinic	28	A
Dental Operating Room	28	A
Dental Prosthetic Laboratory	42	A
Dental Recovery Room	28	B
Dental Waiting Area	28	A
Oral Hygiene Room	28	B
Preventive Dentistry Room	28	B

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) Offices shall be served by a "W" system when they are located in the hospital area; otherwise by a "Z" system. All other spaces shall be served by a "W" system.

3.2 Applicable only to:**Dental Ceramic Laboratory**

- a) A minimum positive pressure of 0.25 inches of water shall be maintained with access doors closed.
- b) Dental Ceramic Laboratory shall have provision for a class (W) system exhaust directing directly to the weather from dental prosthetic benches, ovens, and furnaces. Hood air quantities shall be such as to preclude emission of heat, fumes, and contaminants into the space served.
- c) The exhaust system shall have a non-sparking centrifugal fan.

3.3 Applicable only to:**Dental Prosthetic Laboratory**

- a) Dental Prosthetic Laboratory shall have provision for class (W) exhaust direct to weather from dental prosthetic benches, ovens, and furnaces. Hood air quantities shall be such as to preclude emission of heat, fumes, and contaminants into the space served.
- b) The exhaust system shall have a non-sparking centrifugal fan.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: G****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NH	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	75±3°F	75±3°F
b. Design Relative Humidity:	55±5%	55±5%
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): 4
(for recirculation systems)

b. Supply:

Replenishment air quantities shall be based on 25 percent of recirculation system quantity or equal to required natural supply to scrub room, whichever is greater.

c. Exhaust/Return: ---**1.5 Air Distribution/Circulation:**

a) Air distribution shall be designed so as to limit maximum air velocity at the operating table level to 50 fpm.

b) A separate recirculating system, using a non-sparking type centrifugal fan and located outside the compartment, shall be provided.

c) Return air terminals shall be located 12 inches above the deck in two diagonally opposite corners of the space.

d) Supply terminals shall be located in the overhead to ensure a flow of conditioned air over the operating area. Discharge outlets shall be sized to minimize turbulence.

1.6 Air Pressurization:

A positive pressure (minimum 0.50 inches of water) shall be maintained when access doors are closed.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Operating Room	42 A
Surgical Dressing Room (on AM, CV, CVN, LPD, LPH, LHA, LHD only)	42 A

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Rehumidification equipment shall be provided to maintain minimum humidity condition.

b) An approved throw-away type filter preceded by a two-inch fibrous glass prefilter shall be installed downstream of the cooling coil in the recirculation system, and in the replenishment air branch (unless replenishment air branch is directly connected to the recirculation system upstream of the recirculation system air filter). The throw-away filter shall have an efficiency of 99.97 percent on 0.3 micron smoke according to the DOP test.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: D

1.2 HVAC Treatment:

	A/C	VENT	BD
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	75°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	90°F	---

1.4 Air Quantity:

- a. Rate of Change (min):
Mechanical exhaust shall be based on a four-minute rate of change or available natural supply, whichever is greater.
- b. Supply: ---
- c. Exhaust/Returns: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
Intensive Care Unit Bath	14	---
Isolation Quiet Room Bath	14	---
Medical Department Bath	14	---
Quiet Room Bath	14	---
Scrub Room	28	---
Ward Bath	14	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

- a) Heating shall be provided by convection heaters.

3.2 Applicable only to:

Scrub Room

- a) Natural supply shall be taken from the operating room suite.
- b) A positive pressure (minimum 0.25 inches of water) shall be maintained by means of the natural supply when access doors are closed. Note: The operating room suite is maintained at a positive pressure of 0.5 inches.

3.3 Applicable only to:

**Quiet Room Bath
Intensive Care Unit Bath**

- a) The quantity of exhaust air in the Quiet Room Bath and Intensive Care Unit Bath shall be at least equal to the supply quantity in the adjacent space which the bath serves.
- b) Natural supply shall be taken from the space served by the bath.
- c) The exhaust from the Quiet Room Bath and Intensive Care Unit Bath shall be discharged clear of any manned areas.

3.4 Applicable only to:

Ward Bath

- a) Natural supply shall be taken from the space served by the bath.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NM	---	---
c. System Classification	See 3.0		
d. Closure Classification	W	---	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	80°F	75°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:**
See 3.3**2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
Cast Room	28	B
Intensive Care Quiet Room	28	C
Intensive Care Unit	28	C
Isolation Quiet Room	28	C
Physiotherapy Room (Dry)	28	B
Physiotherapy Room (Wet)	28	B
Post-Op Recovery and Intensive Care Unit	28	C
Quiet Room	28	C
Ward	28	B

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

- a) Recirculation systems serving these spaces shall not serve medical or dental offices or food preparation areas.

3.2 Applicable only to:**Ward**

- a) Terminals shall terminate below lowest berth and shall be directed at the deck. Splash plates or other approved means shall be provided at terminals of air conditioning systems where condensation is likely to occur on the underside of decks in way of the cold air discharge.

3.3 Applicable only to:

Quiet Room
Isolation Quiet Room
Intensive Care Unit

- a) Quiet and Isolation Quiet Rooms, and Intensive Care Unit air is not to be exhausted or recirculated to any compartment other than the baths of the Quiet Rooms or Intensive Care Unit.

- b) A negative pressure (minimum 0.25 inches of water) shall be maintained in the Isolation Quiet Room by means of the bath exhaust serving the area, when access doors are closed.

- c) A positive pressure shall be maintained in the Intensive Care Unit.

- d) A HEPA filter(s) of 99.97 percent efficiency on a 0.3 micron DOP smoke test shall be installed in the recirculation system serving these spaces.

3.4 Applicable only to:**Cast Room**

- a) Air from the Cast Room shall not be recirculated; it shall be exhausted via the Physiotherapy Room.

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Maximum permissible temperature is 95°F. Generally, these storerooms are located away from hot compartments and ventilation is unnecessary. Ventilation where necessary, is provided on a 5° rise basis for heat load from transmission only. Cooling effect of surrounding spaces is considered regardless of how the lower temperature is maintained. Medical storerooms in air conditioned areas may be air conditioned to maintain 80°F in lieu of being ventilated to maintain 95°F, if the compartment will not remain below 95°F without treatment.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: D****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	NM	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	See 3.0	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	95°F	40°F

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural exhaust, if used, shall be to surrounding spaces, if necessary to balance exhausts.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Battle Dressing Storeroom	7	---
Dental Storeroom	7	---
Medical Locker	7	---
Medical Storeroom	7	---

3.0 SPECIAL REQUIREMENTS:**1.0 GENERAL REQUIREMENTS:****1.1 Insulation Category: D****1.2 HVAC Treatment:**

	A/R	VENT	BO
a. Supply Air	---	NM	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	---	See 3.0
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	65°F

1.4 Air Quantity:

- a. Rate of Change (min):
Medical Apparatus Rooms shall receive a one-minute rate of change, the Utility Rooms shall receive a six-minute rate of change.
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural supply, if used, shall be taken from surrounding air conditioned spaces.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:**ILLUM NOISE

Medical Apparatus Room	14 D
Utility Room	14 D

3.1 Applicable to all spaces:

- a) If mechanical supply is used, the space shall be heated to maintain 65°F.

Preface to Design Criteria - Group 10
 Photographic (Excluding X-Ray Spaces)
 Printing and Reproduction, and Motion Picture Spaces

These spaces are generally air conditioned except for white print rooms, print washing and drying rooms, and chemical mixing rooms which are ventilated. Some spaces require strict relative humidity control due to photographic processes.

APPLICABLE SPACES - GROUP 10

Compartment Name	Sheet No.
Aerial Picture Process Room	10B
Aviation Photo Lab, Copying, Sorting, & Filing Rm	10B
Camera Repair & Storage Area	10B
Chemical Mixing Room (Photo Lab)	10D
Color Processing Room	10B
Contact Printing Room	10B
Contact Room	10B
Cut Film Development Room	10B
Dark Room	10A
Dark Room (Print Shop)	10B
Developing Room	10B
Enlarging Room	10B
Film Processing Room	10B
Film Rewind Room	10A
JIC/AVN Photo Laboratory Finishing Room	10B
Machine Film Processing Room	10B
Microfilm Processing Room	10B
Motion Picture Film & Rewind Room	10A
Motion Picture Processing Room	10B
Motion Picture Projection Room	10A
Motion Picture Projector Shop	10A
Photo Laboratory	10B
Photographic Dark Room (Recreational)	10A
Photographic Storeroom and Issue Room	10B
Print Shop or Room	10B
Print Washing and Drying Room	10C
Slide Duplication Room	10B
White Print Room	10C

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

None

3.2 Applicable only to:

Dark Room

a) All natural ventilation openings in dark rooms shall have light excluding louvers or hoods.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NH	---	---
c. System Classification	Z	---	---
d. Closure Classification	Z	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min):
Spaces shall be ventilated on the basis of a 6 minute rate of change if located in a ventilated area where air conditioning would be impractical, or if cleaning solvents or other volatile liquids requiring mechanical exhaust ventilation to effectively remove offensive or dangerous fumes are used.
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Dark Room	14	D
Film Rewind Room	28	D
Motion Picture Film & Rewind Room	28	D
Motion Picture Projection Room	28	D
Motion Picture Projector Shop	28	D
Photographic Dark Room (Recreational)	14	A

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** F**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	Design relative humidity shall be 50% ± 5% during cooling and heating season for all command, survey and combatant ships that require dimensional stability of printing processes. All other ships shall be maintained at 55% (max) during cooling season only.	
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Provide recirculation system return terminals over print dryers to conduct heat and moisture directly into air conditioning systems.

1.6 Air Pressurization:

See 3.0.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Aerial Picture Process Room	28	A
Aviation Photo Lab, Copying, Sorting and Filing Room	28	A
Camera Repair & Storage Area	28	A
Color Processing Room	28	A
Contact Printing Room	28	A
Contact Room	28	A
Cut Film Development Room	28	A
Dark Room (Print Shop)	28	A
Developing Room	28	A
Enlarging Room	28	A
Film Processing Room	28	A
JIC/AVN Photo Laboratory Finishing Room	28	A
Machine Film Processing Room	28	A
Microfilm Processing Room	28	A
Motion Picture Processing Room	28	A
Photo Laboratory	28	A
Photographic Storeroom and Issue Room	28	A
Print Shop or Room	28	A
Slide Duplication Room	28	A

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

None

3.2 Applicable only to:**JIC/AVN Photo Laboratory Finishing Room**

a) Provide a single recirculation system with two fans in parallel that shall be provided with:

1. A damper for each fan which will close if the fan fails. The damper shall be automatic in operation and fail-safe. The fail-safe position shall be closed.
2. A damper in the fan bypass duct (if installed) which will close when a fan fails and the fan damper closes. The damper shall be fail-safe. The fail-safe position shall be closed.

3.3 Applicable only to:**Film Processing Room**

a) Positive pressure (minimum 0.25 inches water) shall be maintained at all times.

3.4 Applicable only to:**Dark Room (Print Shop)**

a) Air from the Dark Room (Print Shop) shall not be recirculated.

Criteria Sheet No: 10C

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): 6
- b. Supply:
Mechanical supply shall be provided based on the allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater.
- c. Exhaust/Return:
See 3.0

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization:
See 3.0

2.0 APPLICABLE SPACES: ILLUM NOISE

Print Washing and Drying Room	28	0
White Print Room	28	0

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

3.2 Applicable only to:

White Print Room

a) Mechanical exhaust shall be in accordance with white print processing machine manufacturers requirements or 115% of mechanical supply, whichever is greater.

b) Natural supply shall be taken from surrounding spaces.

c) A negative pressure (minimum of 0.25 inches water) shall be maintained when the access doors are closed.

3.0 SPECIAL REQUIREMENTS:**1.0 GENERAL REQUIREMENTS:****1.1 Insulation Category: D****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

a) Backdraft hoods shall be provided over the chemical mixing tank. See the latest manual of "Industrial Ventilation - A Manual of Recommended Practice" by Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902, for guidance in the design and selection of acceptable exhaust hoods and devices.

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

- a. Rate of Change (min): 1
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Chemical Mixing Room (Photo Lab)

28 A

Preface to Design Criteria - Group 11
Gasoline Spaces

These spaces are ventilated to prevent hazardous buildup of gasoline vapors. Heating is only required for Aviation Fuel Maintenance Shops, and Weapons Elevator Machinery Rooms and Pits (subject to fuel spillage) with hydraulic equipment. Special requirements include non-sparking exhaust fans, flame arresters and separate exhaust systems.

APPLICABLE SPACES - GROUP 11

Compartment Name	Sheet No.
Aviation Fuel Equipment Shop	11C
Aviation Fuel Maintenance Shop	11C
Elevator Pit (subject to gas spillage)	11A
Gasoline Filter Room	11A
Gasoline Fuel Sta. (not open directly to weather)	11A
Gasoline Pump Motor Room	11B
Gasoline Pump Room	11A
Gasoline Trunk	11A
Weapons Elev Mach Rm & Pit (subject to gasoline spillage)	11A

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	H	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	See 3.0
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	50°F

1.4 Air Quantity:**a. Rate of Change (min):**

In compartments that have a volume greater than 1500 cubic feet, minimum quantity is based upon a ten-minute rate of change or 1.5 CFM per square foot, whichever is greater (based on one-half the sum of the areas of decks above and below, except for holds having gallery or nontight decks, where minimum quantity is based on 1.5 CFM per square foot of area of largest deck in compartment). In compartments that have a volume less than 1500 cubic feet, minimum quantity is based on a four minute rate of change or on above rate, whichever is greater.

b. Supply: ---**c. Exhaust/Return: ---****1.5 Air Distribution/Circulation:****1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Elevator Pit (subject to gasoline spillage)	7 ---
Gasoline Filter Room	7 ---
Gasoline Fueling Station (not open directly to weather)	7 ---
Gasoline Pump Room	7 D
Gasoline Trunk	7 ---
Weapons Elevator Machinery Room & Pit (subject to gasoline spillage)	7 ---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Non-sparking type centrifugal fans, located outside the compartment served, shall be used for exhaust systems and shall discharge directly to the weather. Natural supply shall be directly from the weather.

b) A separate exhaust system shall be provided for each gasoline space except that a number of gasoline spaces within a main transverse subdivision may be grouped on a single system. Natural supply ducts may be similarly combined. Supply terminals shall be installed in the overhead. Exhaust terminals shall be installed nine inches above the deck. Exhaust weather openings shall be six feet or more from other openings.

c) Flame arresters shall be installed on the intake side of the exhaust fan outside of the compartment protected, and in a non-watertight section of the exhaust branch.

d) Eight mesh, .035 inch diameter, aluminum wire screen shall be installed in the natural supply compartment terminals.

3.2 Applicable only to:

Weapons Elevator Machinery Room & Pit (subject to fuel spillage)

a) Heating season design temperature shall be 65°F in spaces with hydraulic equipment.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: B****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(U)	---
d. Closure Classification	---	(U)	---

1.3 Air Quality:	Cooling Season	Heating Season
-------------------------	----------------	----------------

a. Design Temperature:	100°F	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	25°F

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:**

Gasoline Pump Motor Room

ILLUM NOISE

7 D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Non-sparking type centrifugal fans, located outside the compartment served, shall be used for exhaust systems and shall discharge directly to the weather. Natural supply shall be directly from the weather.

b) A separate exhaust system shall be provided for each gasoline space except that a number of gasoline spaces within a main transverse subdivision may be grouped on a single system. Natural supply ducts may be similarly combined. Supply terminals shall be installed in the overhead. Exhaust terminals shall be installed nine inches above the deck. Exhaust weather openings shall be six feet or more from other openings.

c) Flame arresters shall be installed on the intake side of the exhaust fan outside of the compartment protected, and in a non-watertight section of the exhaust branch.

d) Eight mesh, .035 inch diameter, aluminum wire screen shall be installed in the natural supply compartment terminals.

Criteria Sheet No: 11C

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): 8
- b. Supply:
Supply air quantities are to be based on the allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

Aviation Fuel Equipment Shop	28 D
Aviation Fuel Maintenance Shop	28 D

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) A non-sparking type centrifugal fan, located outside the space, shall be provided for exhaust.

b) Flame arresters shall be installed on the intake side of the exhaust fan, outside of the compartment protected, and in a non-watertight section of the exhaust branch.

c) Supply terminals shall be installed in the overhead. Exhaust terminals shall be installed nine inches above the deck.

Preface to Design Criteria - Group 12
Miscellaneous Spaces

APPLICABLE SPACES - GROUP 12

Compartment Name	Sheet No.
AEAE Room	12E
AFFF Station	12A
Access	12E
Access Trunk	12E
Air Intake	12E
Air Lock	12A
Anchor and Line Handling Space	12A
Atrium	12A
Aviation Engine Trunk	12A
Balloon Inflation Room	12O
Blowout Trunk	12A
CPS Fan Room	12E
Cable Trunk	12A
Cargo Trunk	12A
Chain Locker	12A
Chain Locker Sump	12A
Classified Waste Destruction Room	12J
Classified Waste Disposal Room	12H
Cofferdam	12A
Conflagration Station	12H
Contaminated Aviation Lubricant Oil Tank Space	12A
Conveyor	12A
Diffuser Room	12E
Drying Room	12B
Dumbwaiter	12A
Enclosed Walkway	12A
Engine (Jet) Test Stand Room	12O
Entertainment Equipment Room	12H
Escape Trunk	12A
Fan Room	12A
Fathometer Trunk	12A
Filter Plenum	12A
Foam Station	12A
HCCF Station	12A
Handling Area	12H
Hangar Bay	12E
Helicopter Hangar	12G
Helicopter Hangar (Enclosed)(except LPH)	12G
Hydraulic Power Room (LSO Display)	12H
Incinerator Room	12J
Jet Engine Control Room	12L
Landing Craft Equipment Room	12A
Laundry Water Heater Room	12E
Light Lock	12A
Light Trap	12E
Line Handling Space	12A
Lithium Battery Locker	12A
Machinery Fan Room	12A
Mail Handling Room	12H
Mooring Station	12A
O.O.D. Station	12A
Parachute Drying Room	12C
Passage	12E
Pitometer Log Trunk	12A
Power Supply/Conversion Room	12H
Pressure Lock	12E
Pressurizer Compartment	12E

Provisions Handling Room	12H
Recompression Chamber	12A
Recompression Room	12H
Repair Station (Above Damage Control Deck)	12A
Repair Station (Damage Control Deck & Below)	12K
SAU Publication Room	12L
Security Station	12A
Service Interface Room	12E
Shelter (Personnel)	12I
Ships Signal Exploitation Space (SSES)	12H
Shore Power Station	12E
Sonar Dome Access Trunk	12E
Squadron Flight Suit Room	12L
Squadron Line Shack	12L
Squadron Ready Room	12L
Stack	12E
Stores Assembly Area (Enclosed)	12H
Stores Landing and Handling Area (Enclosed)	12H
Trash Burner Room	12J
Trash Compactor Room	12P
Type I Airlock	12A
Type II Airlock	12A
Type III Airlock	12A
Unassigned	12A
Underwater Log Meter Trunk	12A
Underwater Log Trunk	12A
Vent Space	12E
Vestibule	12A
Void	12A
Winch Control Space	12E
Wiring Trunk	12A
Writing Room	12H

Criteria Sheet No: 12A

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category:

Insulation categories shall be in accordance with General Specification 635 requirements for spaces at temperatures estimated.

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	MM	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	2	---
d. Closure Classification	---	2	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	50°F

1.4 Air Quantity:

a. Rate of Change (min):	10 (See 3.0)
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation:

Natural supply, if used, shall be taken from surrounding spaces.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
APFF Station	7	---
Air Lock	7	---
Anchor and Line Handling Space	7	---
Atrium	---	---
Aviation Engine Trunk	---	---
Blowout Trunk	---	---
Cable Trunk	---	---
Cargo Trunk	---	---
Chain Locker	---	---
Chain Locker Sump	---	---
Cofferdam	---	---
Contaminated Aviation Lube Oil Tank Space	---	---
Conveyer	---	---
Dumbwaiter	---	---
Enclosed Walkway	7	---
Escape Trunk	7	---
Fan Room	14	---
Fathometer Trunk	---	---
Filter Plenum	---	---
Foam Station	7	---
HCFF Station	7	---
Landing Craft Equipment Room	7	---
Light Lock	---	---
Line Handling Space	7	---
Lithium Battery Locker	---	---
Machinery Fan Room	14	---

Hooring Station	---	---
O.O.D. Station	---	---
Pitometer Log Trunk	---	---
Recompression Chamber	---	---
Repair Station (Above Damage Control Deck)	---	---
Security Station	7	---
Type I Airlock	7	---
Type II Airlock	7	---
Type III Airlock	7	---
Unassigned	7	---
Underwater Log Meter Trunk	---	---
Underwater Log Trunk	---	---
Vestibule	7	---
Void	---	---
Wiring Trunk	---	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) These spaces are not usually ventilated as the prevailing temperature in each space is adequate for its intended use. However, spaces that are penetrated by untrunked catapult or main steam piping which is not of all welded construction or has traps or other fittings, shall have ventilation in accordance with requirements listed above.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: E****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):	2
b. Supply: ---	
c. Exhaust/Return: ---	

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:**ILLUM NOISE

Drying Room 7 ---

Criteria Sheet No: 12C

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: E

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	85°F	85°F
b. Design Relative Humidity:	50%	50%
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply:
Provide 75 CFM (min) replenishment air at all times.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

Parachute Drying Room

ILLUM NOISE

7 ---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

- a) This space is a year-round airing room.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: A****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	N	---
c. System Classification	---	Y	---
d. Closure Classification	---	Y	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	105°F	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply:
- c. Exhaust/Return:
Natural exhaust shall be to the weather.

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:**ILLUM. NOISE

Engine (Jet) Test Stand Room

--- ---

3.0 SPECIAL REQUIREMENTS:

a) The space shall be served by an independent supply system.

b) The supply system shall serve only the test stand.

Criteria Sheet No: 12E

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category:

Insulation categories shall be in accordance with General Specification 635 requirements for spaces at the estimated temperatures.

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	---	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

AEAE Room	---	---
Access	7	D
Access Trunk	7	---
Air Intake	---	---
CPS Fan Room	14	---
Diffuser Room	14	---
Laundry Water Heater Room	7	---
Light Trap	---	---
Passage	7	D
Pressure Lock	---	---
Pressurizer Compartment	---	---
Service Interface Room	---	---
Shore Power Station	---	---
Sonar Dome Access Trunk	7	---
Stack	---	---
Vent Space	---	---
Winch Control Space	---	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

3.2 Applicable only to:

Passage

a) Passageways in air conditioned areas may be used as natural returns. In those cases, if the passage has a load which would result in a temperature rise of ten degrees or more for the return air, a terminal shall be placed in the passage sized for its load. If during the heating season, the passage has a load which results in a temperature drop of ten degrees or more; the passage shall be heated by convection heaters if there is no terminal provided for cooling. Other passageways require no treatment.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: 0

1.2 HVAC Treatment:

	A/C	VENT	80
a. Supply Air	---	---	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

Hangar Bay

ILLUM NOISE

14 E

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) Heating shall be provided by unit heaters ("u" classification).

b) In calculating the heat losses for open hangars, infiltration around doors and elevator hatches is considered. Compute infiltration losses on basis of a 1/8-inch crack and a 20-knot wind for that side of hangar which has the greatest length of crack. Credit heat gain from surrounding spaces of higher temperatures against heat losses.

c) The installation of any ductwork within the hangar is prohibited.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	Z for auxiliaries		
d. Closure Classification	(W) for combatants		

1.3 Air Quality:

Cooling Season Heating Season

a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperatures:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): 6
- b. Supply:
Supply and exhaust air quantities are to be based on the allowable temperature or the minimum rate of change, whichever is greater.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:ILLUM NOISE

Helicopter Hangar	14	0
Helicopter Hangar (Enclosed)	14	0

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	XM	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	100°F	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	50°F

1.4 Air Quantity:

- a. Rate of Change (min): 30
- b. Supply:
Supply air quantities are to be based on allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater.
- c. Exhaust/Returns: ---

1.5 Air Distribution/Circulation:

Natural exhaust, if used, shall be to surrounding spaces or to the weather.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:ILLUM NOISE

Handling Area	28	E
Provisions Handling Room	14	E
Stores Assembly Area (Enclosed)	7	E
Stores Landing and Handling Area (Enclosed)	7	E

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

- a) Cooling effect of surrounding spaces is to be considered regardless of how maintained.

Criteria Sheet No: 121

3.0 SPECIAL REQUIREMENTS:

1.0 GENERAL REQUIREMENTS:

None

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	80
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	NH	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	---	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

- a. Rate of Change (min): 6
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulations:

Natural exhaust, if used, shall be to surrounding spaces or the weather.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

Shelter (Personnel)

7 ---

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	NM	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	See 3.0	---
d. Closure Classification	---	See 3.0	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperatures:	105°F	40°F

1.4 Air Quantity:

a. Rate of Change (min): ---

b. Supply: ---

c. Exhaust/Returns:

Exhaust fans will be an integral part of the trash burner. The fans will take their suction from the room and discharge through the trash burner and smoke pipes to the weather. Exhaust air from incinerator shall be considered sufficient for ventilation purposes.

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurizations:

The mechanical exhaust shall exceed the mechanical supply, if used, by at least 10 percent to insure a negative pressure in the space.

2.0 APPLICABLE SPACES:ILLUM NOISE

Classified Waste Destruction Room (containing incinerator)	7	---
Incinerator Room	7	---
Trash Burner Room	7	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) The supply fan motor, if applicable, shall be interlocked with the motors integral to the trash burner exhaust fans so that all fans are secured or activated simultaneously.

b) If the natural supply is taken from adjacent spaces then the trash burner ventilation system classification must match the ventilation classification of the spaces from which the natural supply is taken. If the natural supply is taken from the weather, the system and closure classification shall be "Y".

Criteria Sheet No: 12K

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category:

1.2 HVAC Treatment:

	A/C	VENT	80
a. Supply Air	---	---	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM. NOISE

Repair Station (Damage Control Deck & Below) 7 A

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

- a) Provide bulkhead mounted type "L" fan, drawing 500 CFM from adjacent space with a natural exhaust in door. Fan shall be wired to station light switch, automatically securing the fan when the space is not in use.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F

1.2 HVAC Treatment:

	A/C	VENT	80
a. Supply Air	M	---	---
b. Exhaust/Return Air	NM	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Returns: ---

1.5 Air Distribution/Circulations: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

Jet Engine Control Room
 SWU Publication Room
 Squadron Flight Suit Room
 Squadron Line Shack
 Squadron Ready Room

ILLUM	NOISE
14	E
14	A
14	A
14	E
14	C

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

3.2 Applicable only to:

Squadron Ready Room

- a) A sound absorbing intake box or sound treated intake duct shall be provided to stop objectionable fan noise from being carried through the system intake to the Ready Room from which the air is taken.

3.3 Applicable only to:

Jet Engine Control Room

- a) Inlet and outlet ducts at the penetration of the control room boundaries shall be flexible and sound treated to reduce noise transmission.

Criteria Sheet No: 12A

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
Conflagration Station	14	A
Hydraulic Power Room (LSO Display)	14	O
Power Supply/Conversion Room	14	D
Ships Signal Exploitation Space (SSES)	28	A

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

3.2 Applicable only to:

Conflagration Station

- a) Install closure on replenishment and exhaust air ducts inside the station.

3.0 SPECIAL REQUIREMENTS:

These spaces shall be ventilated on a six minute rate of change if these spaces are located in a ventilated area where air conditioning would be impractical.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO.
a. Supply Air	M	See 3.0	---
b. Exhaust/Return Air	NM	NM	---
c. System Classification	Z	---	---
d. Closure Classification	Z	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):	See 3.0
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Classified Waste Disposal Room (no incinerator installed)	14 D
Entertainment Equipment Room	14 O
Mail Handling Room	14 A
Recompression Room	14 D
Writing Room	28 A

Criteria Sheet No: 120

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category:

Insulation categories shall be in accordance with General Specification 635 requirements for spaces at temperatures estimated.

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	---	M
b. Exhaust/Return Air	---	---	M
c. System Classification	---	---	W
d. Closure Classification	---	---	Y

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	50°F

1.4 Air Quantity:

a. Rate of Change (min):	8
b. Supply: ---	
c. Exhaust/Returns: ---	

1.5 Air Distribution/Circulation:

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
Balloon Inflation Room	---	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

3.0 SPECIAL REQUIREMENTS:1.0 GENERAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

1.1 Insulation Category: 0

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M/N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	100°F	P
b. Design Relative Humidity:	---	----
c. Assumed Temperature:		40°F

1.4 Air Quantity:

- a. Rate of Change (min): 4
- b. Supply:
Mechanical supply shall be up to 90% of the exhaust air requirement, with the balance natural supply from surrounding area.
- c. Exhaust/Return:
Exhaust air quantities are to be based on allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater.

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization:

The mechanical exhaust shall exceed the mechanical supply, if used, by at least 10 percent to insure a negative pressure in the space.

2.0 APPLICABLE SPACES:ILLUM NOISE

Trash Compactor Room

7 ---

Preface to Design Criteria - Group 13
 Stowage Spaces (Excluding Nuclear, Medical, Dental,
 Gasoline, Catapult, Photographic and Weapons)

Generally storerooms are ventilated if they contain hazardous materials and air conditioned or ventilated (dependent on load, and ease and/or economics of air conditioning) if they contain material that is temperature and/or humidity sensitive and not in vapor-sealed containers. All storerooms subject to probable steam leakage should receive ventilation.

APPLICABLE SPACES - GROUP 13

Compartment Name	Sheet No.
AEAE Room And Aviation Storeroom	13J
AEFF Drum Stowage	13J
Acid Storeroom	13G
Air Intelligence Storeroom	13J
Air Objective Folder Storeroom	13D
Aircraft Control Surfaces Stowage	13J
Aircraft Wheel and Tire Stowage	13J
Alcohol Storeroom	13A
Anchor Handling Equipment Storeroom	13J
Arresting Gear Storeroom	13B
Athletic Gear Storeroom	13B
Auxiliary Fuel Tank Stowage	13J
Aviation Chart Storeroom	13D
Aviation Electronics Storeroom	13J
Aviation Engine Test Stand Storeroom	13J
Aviation Engines Storeroom	13J
Aviation Flammable Liquids Locker	13A
Aviation Flammable Liquids Storeroom	13A
Aviation Flight Gear Storeroom	13J
Aviation Ground Support Equip & Bomb Truck Stowage	13J
Aviation Maint Support Package Storeroom	13J
Aviation Ordnance Storeroom	13J
Aviation Paint Mixing and Issue Room	13A
Aviation Photo Interpretation Storeroom	13D
Aviation Storeroom (Bomb Moist)	13A
Aviation Storeroom (Flammable)	13A
Aviation Storeroom (Nonflammable)	13J
Avionics Storeroom	13J
Baggage Rooms	13J
Band Room	13J
Barricade Storeroom	13J
Battery Storeroom (No Charging)	13J
Berth/Chair Storeroom	13J
Boat Gear Locker	13J
Boatswain Storeroom	13J
Bulk Stores	13J
Captains Publication Locker	13J
Chemical Warfare Defense Equipment Storeroom	13J
Chief Master-Ar-Arms Storeroom	13J
Clean Bag Stowage	13J
Clean Clothes Locker	13J
Clean Parts Storeroom	13J
Cleaning Gear Locker	13J
Clothing and Small Stores Storeroom	13J
Communications Storeroom	13D
Crash and Salvage	13J
Deck Gear Locker	13J
Dress Ship Lighting Streamer Stowage	13J
Drone Helicopter Storeroom	13J
Dry Cleaning Storeroom	13J
Dry Provisions Storeroom	13J
Election Rack Stowage	13J
Electrical Storeroom	13J

Electronics Storeroom	13J
Electronics Test Equipment Storeroom	13E
Engineer's File and Publication Room	13D
Engineer's Storeroom	13J
EOB Storeroom	13J
Facilities Maintenance Equipment Storeroom	13J
Flammable Liquids Issue Room	13A
Flammable Liquids Storeroom	13A
Floodlight Stowage	13J
Folding Chair Stowage	13J
Foul Weather Gear Locker	13B
Fueling At Sea Hose Stowage	13J
Fueling Station Locker	13J
Gas Cylinder Locker	13J
Gas Cylinder Storeroom (Flammable)	13A
Gas Cylinder Storeroom (Nonflammable)	13H
Gas Cylinder Storeroom (Oxygen)	13H
Gas Equipment Storeroom	13J
Gas Generator Stowage	13J
Gas Mask Storeroom	13J
Gun Barrel Stowage Trunk	13J
Gun Gear Locker	13J
Helon Cylinder Storeroom	13H
Handling Equipment Storeroom	13J
Hangar Deck Gear Locker	13J
Helium Bottle Stowage	13J
Helo Crash & Rescue Locker	13J
Helo Crash & Salvage Locker	13J
Helo Service Locker	13J
Internal Fuel Tank Stowage (Empty)	13J
JP-5 Stowage	13J
Jet Engine Test Facility Storeroom	13J
Landing Force Equipment Storeroom	13J
Lashing Gear Storeroom	13J
Laundry Storeroom	13J
Linen Locker	13J
Litter Stowage Locker	13J
Lumber Stowage	13J
Mailbag Storeroom	13J
Mast Stowage Trunk	13J
Meteorological Storeroom	13J
Missile Checkout Equipment Storeroom	13E
Missile Launcher Handling Equipment Storeroom	13J
Mobile Equipment Stowage	13J
Napalm Stowage	13J
Navigator's Storeroom	13J
Ordnance Equipment Storeroom	13J
Ordnance Storeroom	13J
Outside Machine Shop Storeroom	13J
Paint Mixing and Issue Room	13A
Parachute Storeroom	13C
Pattern & Foundry Material Storeroom	13J
Periscope Stowage Trunk	13F
Pipe, Bar, and Plate Stowage	13J
Portable Electronic Equipment Storeroom	13J
Print Shop Storeroom	13J
Publication Storeroom	13J
Rain Clothes Locker	13B
Reel Storeroom	13J
Refrigerated Photo Storeroom	13J
Registered Pubs. (Strongroom, Vault, or Locker)	13D
Repair Parts Stowage	13J
Replenishment Equipment Storeroom	13J
Robe Locker	13J
Rod Motor Stowage	13J
Rope Stowage	13J
S.D. Storeroom	13J
S.D. Storeroom (Flammable Gas Cylinders)	13A
S.D. Storeroom (Flammable Liquids)	13A
S.D. Storeroom (Flammable Materials)	13A

S.D. Storeroom Mobile Equipment (Repair Parts)	13J
Security Alert Team Locker	13J
Security Light Stowage	13J
Ships Store Flammable Materials Storeroom	13A
Ships Store Storeroom	13J
Sonobuoy Ready Service & Bathythermograph Stowage	13J
Sonobuoy Storeroom	13J
Special Clothing Storeroom	13J
Storeroom (Crew and Officers-Personal Gear)	13J
Stores Handling Equipment Stowage	13J
Submarine Component Storeroom	13J
Sweep Gear Storeroom	13B
Table Leaf Locker	13J
Tailor & Dry Cleaning Supply Storeroom	13J
Training Aids Locker	13J
Typewriter Shop Storeroom	13J
UNREP Wire Rope Reel Storeroom	13J
Wardroom Storeroom	13J
Wash Deck Gear Locker	13J
Weapons Fire Control Shop Storeroom	13E
Weapons Special Purpose Portable Test Equip Strm.	13E

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	--	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	40°F

1.4 Air Quantity:

a. Rate of Change (min):	4
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---**

A minimum negative pressure of 0.25 inches of water pressure shall be maintained when access doors are closed.

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
Alcohol Storeroom	3	---
Aviation Flammable Liquids Locker	14	D
Aviation Flammable Liquids Storeroom	3	---
Aviation Storeroom (Flammable)	3	---
Flammable Liquids Issue Room	14	D
Flammable Liquids Storeroom	14	D
Flammable Materials S.D. Storeroom	3	D
Gas Cylinder Storeroom (Flammable)	3	---
Paint Mixing and Issue Room	14	---
S.D. Storeroom (Flammable Gas Cylinders)	3	---
S.D. Storeroom (Flammable Liquids)	3	D
Ship Store Flammable Materials Storeroom	3	D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Exhaust terminals shall be provided nine inches above the deck and in the overhead.

b) Supply terminals shall have eight mesh 0.035 inch diameter aluminum wire screen.

c) If a compartment (or compartments) exhaust quantity exceeds 10 percent of system quantity, a non-sparking centrifugal fan (located outside the compartment served) shall be used for the system.

d) Spaces shall be equipped with an airflow alarm, Circuit HF, in accordance with the General Specifications for Ships of the U.S. Navy, Section 437, current edition.

e) Minimum rate of change is 4.

f) Spaces of this type shall not be grouped together on a single system if compartments are within more than one main transverse subdivision.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** C**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

Cooling Season	Heating Season
----------------	----------------

a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature	100°F	40°F

1.4 Air Quantity:

a. Rate of Change (min):	10
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation: ---

Natural supply shall be taken from surrounding spaces.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:**ILLUM NOISE

Arresting Gear Storeroom	3	---
Athletic Gear Storeroom	3	---
Foul Weather Gear Locker	14	0
Rain Clothes Locker	3	---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) If the assumed heating season temperature cannot be maintained using naturally supplied air, the space will be provided with a unit heater.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	85°F	75°F
b. Design Relative Humidity:	50%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM. NOISE**

Parachute Storeroom

3 ---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) No ductwork shall pass through space.

b) The air conditioning ducts servicing spaces not protected by security stations and containing classified material shall be watertight for at least four feet within the space with at least one 90° elbow in the watertight section and shall not be larger than six inch diameter, twelve inch long watertight duct with a 90° elbow within the space.

c) Spaces containing material requiring control of dimensional stability shall be serviced by class "W" systems. All other spaces shall be served by class "Z" systems.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NM	---	---
c. System Classification	See 3.0	---	---
d. Closure Classification	See 3.0	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Air Objective Folder Storeroom	7	---
Aviation Chart Storeroom	7	---
Aviation Photo Interpretation Storeroom	14	---
Communications Storeroom	7	D
Engineer's File and Publication Room	14	D
Registered Publications (Strongroom, Vault, or Locker)	7	---

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NM	---	---
c. System Classification	See 3.0	---	---
d. Closure Classification	See 3.0	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
Missile Checkout Equipment Storeroom	7	---
Electronic Test Equipment Storeroom	7	---
Weapons Fire Control Shop Storeroom	7	---
Weapons Special Purpose Portable Test Equipment Storeroom	7	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

3.2 Applicable only to:

Missile Checkout Equipment Storeroom
Weapons Fire Control Shop Storeroom
Weapons Special Purpose Portable Test Equipment Storeroom

a) System and closure classification shall be "4".

3.3 Applicable only to:

Electronic Test Equipment Storeroom

a) System and closure classification shall be "2".

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** 0**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	NM	---
b. Exhaust/Return Air	---	N	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	90°F	40°F

1.4 Air Quantity:

a. Rate of Change (min):	30
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be taken from surrounding spaces.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Periscope Stowage Trunk 3 ---

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** D**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	---	NM
b. Exhaust/Return Air	---	---	M
c. System Classification	---	---	See 3.0
d. Closure Classification	---	---	X

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	---	P(BO)
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	90°F	40°F

1.4 Air Quantity:

a. Rate of Change (min):	4(BO)
b. Supply: ---	
c. Exhaust/Return: ---	

1.5 Air Distribution/Circulation:

Natural supply, if used, shall be taken from surrounding spaces.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Acid Storeroom

3 ---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Preferred damage control classification for system is "X". If an "X" system is not readily available however, a "(W)" or "Z" system is acceptable.

Criteria Sheet No: 13H

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	---	NH
b. Exhaust/Return Air	---	---	H
c. System Classification	---	---	Z or (W)
d. Closure Classification	---	---	X

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	See 3.0

1.4 Air Quantity:

- a. Rate of Change (min): 8 (80)
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural supply, if used, shall be taken directly from the weather.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

Gas Cylinder Storeroom (Non-flammable)	3	---
Gas Cylinder Storeroom (Oxygen)	3	---
Halon Cylinder Storeroom	3	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

- a) Preheat if mechanical supply; no heating is required if natural supply is used.
- b) Assumed temperature using natural supply is 30°F.
- c) Assumed temperature using mechanical supply is 40°F.

3.2 Applicable only to:

Gas Cylinder Storeroom (Oxygen)

- a) If compartment exhaust quantity exceeds 10 percent of system quantity a non-sparking centrifugal exhaust fan (located outside the compartment served) shall be used for the system.

3.3 Applicable only to:

Halon Cylinder Storeroom

- a) Exhaust terminals shall terminate 9 inches above the deck.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: 1****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	M	---
b. Exhaust/Return Air	NM	NM	---
c. System Classification	---	2	---
d. Closure Classification	---	2	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	95°F See 3.0	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return:
Natural exhaust, if used, shall be to the surrounding spaces or to the weather.

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Dry Provisions Storeroom

14 0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Maximum permissible temperature is 95°F. Generally these storerooms are located away from hot compartments and ventilation is unnecessary. Ventilation, if required, is provided on a 5° rise basis for heat loads from transmission only. Cooling season design temperature calculations shall include the cooling effects of the surrounding spaces regardless of how the lower temperatures are maintained.

b) Storerooms in air conditioned areas may be air conditioned to maintain 85°F in lieu of being ventilated to maintain 95°F, if the storerooms will not remain below 95°F without treatment.

c) Provide terminals with 1/2 inch mesh screen.

Criteria Sheet No: 13J

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category:

Insulation categories shall be in accordance with General Specification 635 requirements for spaces at the estimated temperatures.

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	NM	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	2	---
d. Closure Classification	---	2	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	40°F

1.4 Air Quantity:

a. Rate of Change (min):	10
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation:

Natural supply, if used, shall be taken from surrounding spaces.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
AEAE Room And Aviation Storeroom	3	---
AFFF Drum Stowage	3	---
Air Intelligence Storeroom	3	---
Aircraft Control Surfaces Stowage	3	---
Aircraft Wheel and Tire Stowage	3	---
Anchor Handling Equipment Storeroom	3	---
Auxiliary Fuel Tank Stowage	3	---
Aviation Electronics Storeroom	3	---
Aviation Engine Test Stand Storeroom	3	---
Aviation Flight Gear Storeroom	3	---
Aviation Ground Support Equipment and Bomb Truck Stowage	3	---
Aviation Maint Support Package Storeroom	3	---
Aviation Ordnance Storeroom	3	---
Aviation Storeroom (Nonflammable)	3	---
Avionics Storeroom	3	---
Baggage Rooms	3	---
Band Room	3	---
Barricade Storeroom	3	---
Battery Storeroom (No Charging)	3	---
Berth/Chair Storeroom	3	---
Boat Gear Locker	3	---
Boatswain Storeroom	3	---
Bulk Stores	3	---

Captain's Publication Locker	---	---
Chemical Warfare & Defense Equip. Strm.	3	---
Chief Master-At-Arms Storeroom	3	---
Clean Bag Stowage	3	---
Clean Clothes Locker	---	---
Clean Parts Storeroom	3	---
Cleaning Gear Locker	---	---
Clothing and Small Stores Storeroom	3	---
Crash and Salvage	3	---
Deck Gear Locker	---	---
Dress Ship Lighting Streamer Stowage	3	---
Drone Helicopter Storeroom	3	---
Dry Cleaning Storeroom	3	---
Ejection Rack Stowage	3	---
Electrical Storeroom	3	---
Electronics Storeroom	3	---
Engineer's Storeroom	3	---
Facilities Maintenance Equipment Strm.	3	---
Floodlight Stowage	3	---
Fueling At Sea Hose Stowage	3	---
Fueling Station Locker	---	---
Gas Cylinder Locker	---	---
Gas Equipment Storeroom	3	---
Gas Generator Stowage	3	---
Gas Mask Storeroom	3	---
Gun Barrel Stowage Trunk	3	---
Gun Gear Locker	---	---
Handling Equipment Storeroom	3	---
Hangar Deck Gear Locker	---	---
Helium Bottle Stowage	3	---
Helo Crash & Rescue Locker	---	---
Helo Crash & Salvage Locker	---	---
Helo Service Locker	---	---
Internal Fuel Tank Stowage (Empty)	---	---
JP-5 Stowage	3	---
Jet Engine Test Facility Storeroom	3	---
Landing Force Equipment Storeroom	3	---
Lashing Gear Storeroom	3	---
Laundry Storeroom	3	---
Linen Locker	---	---
Litter Stowage Locker	---	---
Lumber Stowage	3	---
Mailbag Storeroom	3	---
Mast Stowage Trunk	3	---
Meteorological Storeroom	3	---
Missile Launcher Handling Equipment Strm.	3	---
Mobile Equipment Stowage	3	---
Napalm Stowage	3	---
Navigator's Storeroom	3	---
Ordnance Equipment Storeroom	3	---
Ordnance Storeroom	3	---
Outside Machine Shop Storeroom	3	---
Pattern & Foundry Material Storeroom	3	---
Pipe, Bar, and Plate Stowage	3	---
Portable Electronic Equipment Storeroom	3	---
Print Shop Storeroom	3	---
Publication Storeroom	3	---
Reel Storeroom	3	---
Refrigerated Photo Storeroom	3	---
Repair Parts Stowage	3	---
Replenishment Equipment Storeroom	3	---
Robe Locker	---	---
Rod Motor Stowage	3	---
Rope Stowage	3	---
S.O. Storeroom	3	---
S.O. Storeroom (Mobile Equip Repair Parts)	3	---
Security Alert Team Locker	---	---

Criteria Sheet No: 13J (continued)

Security Light Stowage	3	---
Ships Store Storeroom	28	---
Sonobuoy Ready Service & Bathythermograph Stowage	3	---
Sonobuoy Storeroom	3	---
Special Clothing Storeroom	3	---
Storeroom (Crew & Officers-Personal Gear)	3	---
Stores Handling Equipment Stowage	3	---
Submarine Component Storeroom	3	---
Table Leaf Locker	---	---
Tailor & Dry Cleaning Supply Storeroom	3	---
Training Aids Locker	---	---
Typewriter Shop Storeroom	3	---
Wardroom Storeroom	3	---
Wash Deck Gear Locker	---	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) These spaces are not usually ventilated as the prevailing temperature in each space is adequate for its intended use. However spaces that are penetrated by untrunked catapult or main steam piping, that is not of all welded construction or has traps or other fittings, shall have ventilation in accordance with requirements listed above.

3.2 Applicable only to listed spaces:

Captain's Publication Locker

a) Ventilation ducts shall not pass through this space.

Preface to Design Criteria - Group 14
Catapult Spaces

Catapult spaces are usually ventilated except for Catapult Control Rooms (air conditioned). Where catapult spaces are located adjacent to air conditioned spaces, a negative pressure is generally maintained in the catapult space so as to avoid creating an excessive heat load to those adjacent air conditioned spaces.

APPLICABLE SPACES - GROUP 14

Compartment Name	Sheet No.
Aviation Storeroom (Catapult Bridles)	14H
Aviation Storeroom (Catapult Spares)	14H
Breakwater Pump Room	14C
Breakwater Tank	14B
Catapult Control Room	14E
Catapult Exhaust and Blowdown Overboard	14G
Catapult Launching Valve Room	14F
Catapult Lube Oil Pump and Tank Space	14H
Catapult Lube Oil Tank, Pump and Valve Room	14H
Catapult Machinery Room	14D
Catapult Piping Space	14F
Catapult Piping Trunk	14G
Catapult Retraction Engine Machinery Room	14D
Catapult Steam Lines (Trunked)	14G
Catapult Steam Receiver Space	14F
Catapult Steam Receiver Tank Space	14F
Catapult Trough (through CVN 71)	14A1
Catapult Trough (CVN 72 and later)	14A2
Catapult Trough Warmup Room	14F
Catapult Warmup Room	14F
Integrated Catapult Control Station	14E
Vent For Breakwater Tank (MT Trunk)	14H

Criteria Sheet No: 14A1

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: A

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	N	---
b. Exhaust/Return Air	---	N	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature: (During catapult operations)	400°F	70°F

1.4 Air Quantity:

a. Rate of Change (min):	0.5
b. Supply: ---	
c. Exhaust/Return: ---	

1.5 Air Distribution/Circulation:

The exhaust shall be ducted directly to the weather.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

Catapult Trough (Through CVN 71) --- ---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) The exterior surface temperature of exposed insulation, air chamber or void bulkheads shall not exceed 125°F.

b) A galvanized sheet metal air casing shall be installed around catapult troughs as shown in Figure No. 14A. Portions of the trough passing through spaces with a design or assumed temperature in excess of 110°F do not require an air casing unless this would result in construction of numerous independent sections of trough air casing. Each section of trough air casing shall be ventilated. Supply air exhaust connections shall be at the extreme opposite end of each trough section to insure maximum effective heat removal.

c) Exhaust fans shall be Navy Standard Centrifugal type.

d) Provisions shall be made for a trap/separator to be installed in the ductwork between the air casing and the fan.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: A****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	---	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

	Cooling Season	Heating Season
a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature: (During catapult operations)	400°F	70°F

1.3 Air Quality:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.4 Air Quantity:

The exhaust shall be ducted directly to the weather.

1.5 Air Distribution/Circulation:**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Catapult Trough (CVN 72 and later) --- ---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Six inches of insulation having a "U" factor of 0.045 BTU/hr-ft² °F shall be installed between the catapult trough and adjacent spaces. See Figure No. 14B.

b) Two inch thick fibrous glass board insulation shall be installed on the exterior of the void bulkhead.

c) The exterior surface temperature of insulation or void bulkheads that are exposed shall not exceed 125°F.

3.0 SPECIAL REQUIREMENTS:**1.0 GENERAL REQUIREMENTS:****1.1 Insulation Category:** None**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	--	---	N
b. Exhaust/Return Air	---	---	N
c. System Classification	---	---	(W)
d. Closure Classification	---	---	Y

1.3 Air Quality:

Cooling Season	Heating Season
----------------	----------------

a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	105°F	50°F

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Provide a branch duct and damper to permit the air supplied to the breakwater rooms to be diverted to the breakwater tank during inspection periods of that space. Supply the air through one or more adjustable terminals extending into the tank and located to permit an air blast to be directed on men engaged in inspection activities.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Break Water Tank

--- ---

a) Terminals and ductwork inside the tank shall be CRES. If terminals are subject to distortion from surges of spray or water, suitable means for protecting them shall be provided. The installation of the terminals shall be such that water will not enter the system.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	105°F	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	50°F

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Provide a branch duct and damper to permit air supplied to the breakwater pump rooms to be diverted to the breakwater tank during inspection of that space. Supply air through one or more adjustable terminals extending into the tank and located to permit an airblast to be directed on men engaged in inspection activities.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:**

Brake Water Pump Room

ILLUM NOISE

7 D

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

Terminals and ductwork inside the tank shall be CRES. If terminals are subject to distortion from surges of spray or water, suitable means for protecting them shall be provided. The installation of the terminals shall be such that water will not enter the system.

3.0 SPECIAL REQUIREMENTS:**1.0 GENERAL REQUIREMENTS:****1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	--
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return:
Exhaust air quantity shall be 115 percent of supply air.

1.5 Air Distribution/Circulation:

Locate an exhaust terminal in the overhead near all high voltage transformers.

1.6 Air Pressurizations:

Where space is adjacent to air-conditioned areas, maintain 0.25 inches water negative pressure in the space.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Catapult Machinery Room	7 D
Catapult Retraction Engine Machinery Room	7 D

3.1 Applicable to all spaces:

For guidance in arrangement of systems serving these spaces see Figure No. 14C.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** F**1.2 HVAC Treatment:**

	A/C	VENT	80
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:** ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Catapult Control Room 28 E
 Integrated Catapult Control Station (ICCS) 14 E

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Inlet and outlet ducts at the penetration of the control room boundaries shall be flexible and treated to reduce noise transmission.

b) Flame resistant, non-metallic flexible ductwork shall be used to connect fixed air conditioning ductwork to the movable ICCS cab.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** A**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	120°F	50°F

1.4 Air Quantity:

- a. Rate of Change (min):
Catapult Launching Valve Room shall have a 0.5 minute rate of change, all other spaces shall have a 1 minute rate of change.
- b. Supply: ---
Supply terminals shall be so located near all deck tensioners and nose gear launch equipment such that the temperature in the vicinity of the deck tensioner and the nose gear launch equipment during normal operations is minimized.
- c. Exhaust/Return:
Exhaust air quantity shall be 115 percent of supply air.

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:**

Where space is adjacent to air conditioned areas, maintain 0.25 inches water negative pressure in the space.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Catapult Launching Valve Room	7	0
Catapult Piping Space	3	---
Catapult Steam Receiver Space	3	---
Catapult Steam Receiver Tank Space	3	---
Catapult Trough Warmup Room	3	---
Catapult Warm Up Room	3	---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

None

3.2 Applicable only to:

Catapult Launching Valve Room

- a) Exhaust air quantity shall be 115 percent of supply air.
- b) Provide independent supply and exhaust systems.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: A****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	See 3.0 (W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:

Cooling Season	Heating Season
----------------	----------------

a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	150°F	50°F

1.4 Air Quantity:

a. Rate of Change (min):	1
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:**ILLUM NOISE

Catapult Exhaust and Blowdown Overboard	---	---
Catapult Piping Trunk	---	---
Catapult Steam Lines (Trunked)	---	---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Where a catapult steam supply or exhaust line trunk is open to a compartment that is ventilated only because the steam line passes through it, the space exhaust may be taken via the trunk in lieu of providing independent mechanical supply for the trunk.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:**

Insulation categories shall be in accordance with General Specification 635 requirements for spaces at temperatures estimated.

1.2 HVAC Treatment:

These spaces are not usually ventilated as the prevailing temperature in each space is adequate for its intended use.

	A/C	VENT	BO
a. Supply Air	---	---	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:

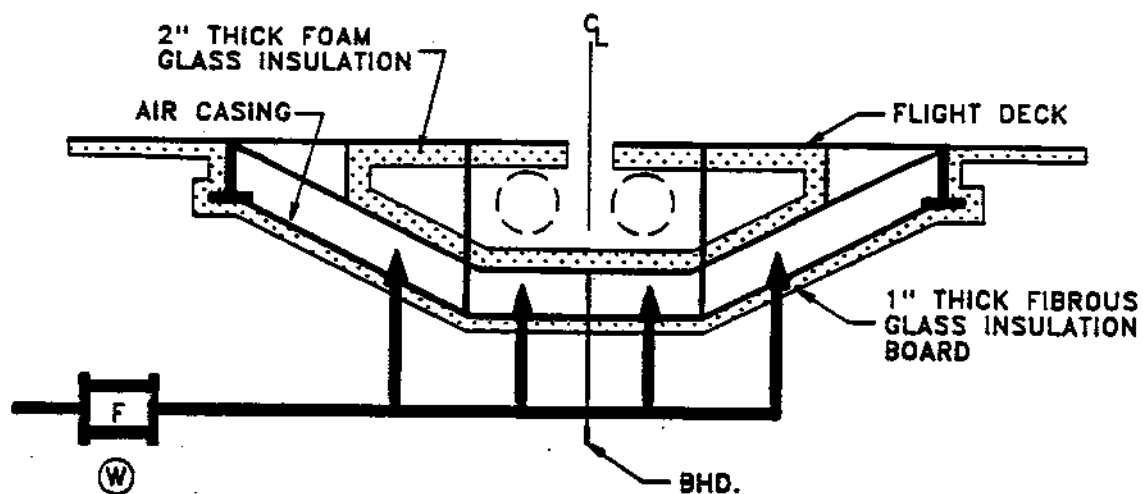
	Cooling Season	Heating Season
a. Design Temperature	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

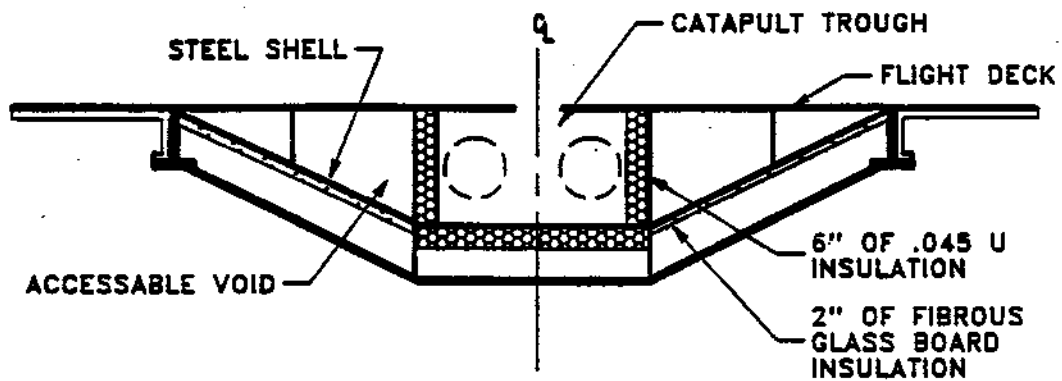
Aviation Storeroom (Catapult Bridles)	3	---
Aviation Storeroom (Catapult Spares)	3	---
Catapult Lube Oil Pump and Tank Space	---	---
Catapult Lube Oil Tank, Pump and Valve Room	---	---
Vent For Brake Water Tank (WT Trunk)	---	---



SECTION THROUGH CATAPULT TROUGH

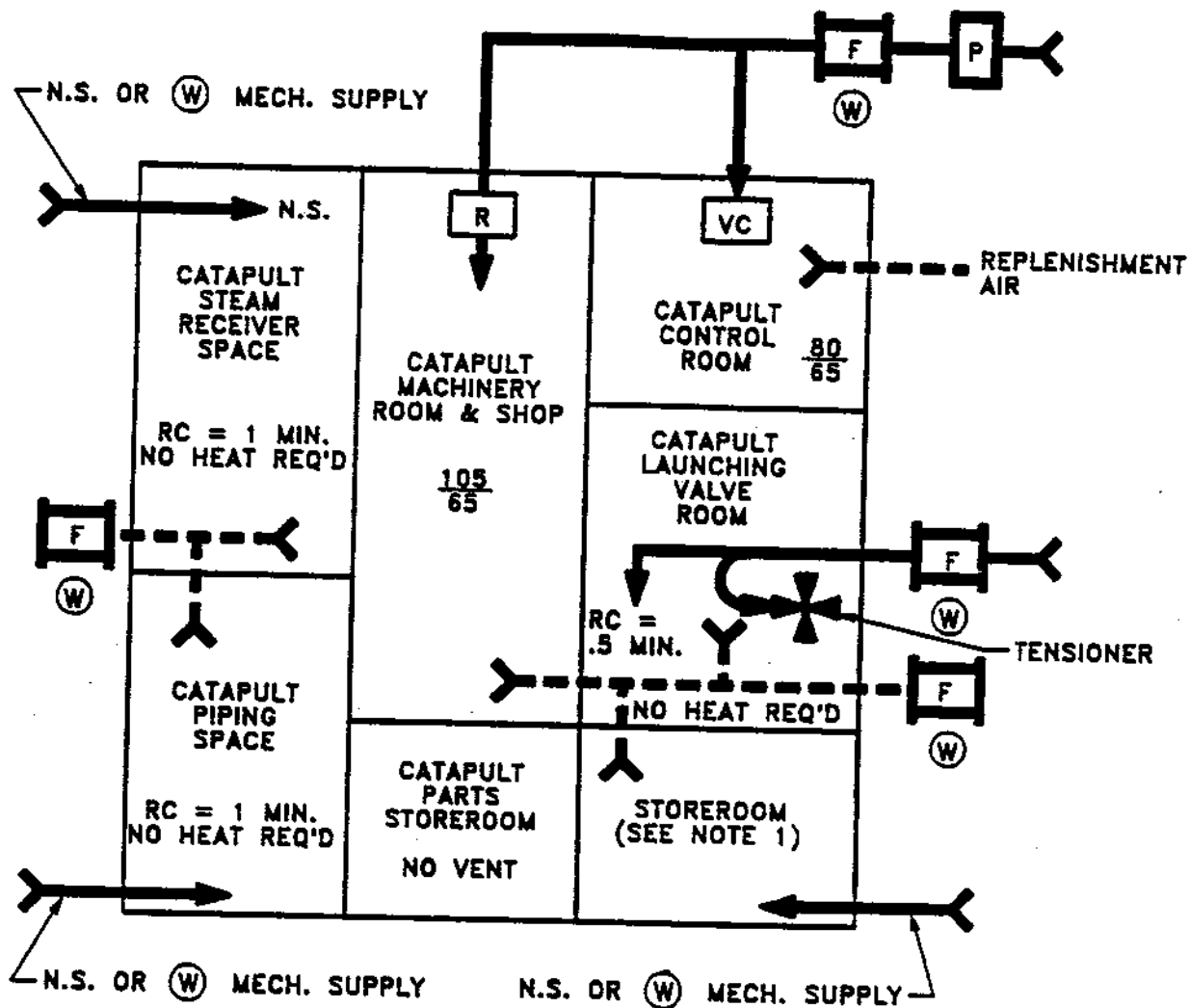
- NOTES: 1. DUCT ARRANGEMENT FOR CONNECTING NATURAL EXHAUST TO WEATHER IS TO BE SIMILAR TO THAT INDICATED FOR MECHANICAL SUPPLY SYSTEM.
2. ARRANGE SYSTEMS SO AS TO PROVIDE MAXIMUM CIRCULATION THROUGH AIR CASING.

VENTILATION CATAPULT TROUGH
Figure No. 14A



SECTION THROUGH CATAPULT TROUGH

CATAPULT TROUGH VENTILATION
Figure No. 14B



NOTE 1: STOREROOM IS NOT NORMALLY VENTILATED BUT CONTAINS STEAM PIPING.

VENTILATION CATAPULT SPACES (STEAM)
Figure No. 14C

Preface to Design Criteria - Group 15
Ammunition Spaces (excluding FBH)

Magazine spaces are usually provided with blowout ventilation and cooled to limit temperature levels to 100°F or less. Shops included with this group are either ventilated or air conditioned and provided with blowout.

APPLICABLE SPACES - GROUP 15

Compartment Name	Sheet No.
2.75" Rocket Head Magazine	15J
2.75" Rocket Launcher Magazine	15K
2.75" Rocket Warhead Magazine	15K
20mm Ammunition Magazine	15K
20mm Belt Link Stowage	15A
20mm Belting Room	15K
20mm Ready Service Locker	15K
20mm Ready Service Room	15K
3"/50 Caliber Ammunition Magazine	15K
3"/50 Caliber Handling Room	15K
3"/50 Caliber Ready Service Locker	15A
3"/50 Caliber Ready Service Room	15K
40mm Ammunition Magazine	15J
5" Rocket Head Magazine	15J
5" Rocket Launcher Magazine	15K
5" Rocket Warhead Magazine	15K
5"/38 Caliber Handling Room	15K
5"/38 Caliber Magazine	15K
5"/38 Caliber Powder Magazine	15K
5"/38 Caliber Ready Service Magazine	15K
5"/54 Caliber Handling Room	15K
5"/54 Caliber Loader Drum Room	15P
5"/54 Caliber Powder Magazine	15K
5"/54 Caliber Projectile Magazine	15K
5"/54 Caliber Projectile Stowage	15K
5"/54 Caliber Shop	15D
50 Caliber Magazine	15K
ASROC Component Storeroom	15A
ASROC Magazine	15L
ASROC Missile Magazine	15L
ASROC Motor Magazine	15J
ASROC Power Supply Stowage	15A
ASROC Workshop	15I
Aircraft Guided Missile Component Stowage	15A
Aircraft Ready Service Magazine	15H
Arming Devices Magazine	15J
Aviation Ejection Seat Rocket Magazine	15J
BRIGHTEYE Magazine	15J
Blasting Cap Magazine	15L
Bomb Magazine (Unfused)	15K
Bomb Tail Stowage	15A
CBU Magazine	15K
CIWS Magazine	15K
CIWS Storeroom	15A
CM Rocket Motor Magazine	15J
Cargo Bomb Fuse/Primer Detonator Magazine	15K
Cargo Fuses Magazine	15J
Cargo Hold (conventional ammunition)	15J
Cargo Hold (missiles-except liquid fueled)	15I
Cargo Hold (missiles-liquid fueled)	15Q
Cargo Hold (special weapons)	15L
Cartridge Actuated Device Magazine	15K
Cartridge Room	15L
Chemical Gun Ammunition Magazine	15L
Demolition Explosive Magazine	15J

Detonator Locker	15J
Detonator Magazine	15J
Dummy Weapon Stowage	15A
Emergency Ordnance Disposal Team	15H
Explosive Stowage & Test Shop	15H
Explosion Ordnance Disposal Work Center	15H
Explosive Section Magazine	15J
Fire Bomb Case Stowage	15A
Fire Bomb Solution Storeroom	15E
Flare Handling Room	15Q
Flare Magazine	15J
Fuel Air Explosive (FAE) Magazine	15Q
Fuse Magazine	15J
High Explosives Magazine	15L
MK 13 G.M.L.S. (Magazine Inner Structure)	15F
MK 13 G.M.L.S. (Magazine Missile Chamber)	15H
MK 24 Flare Stowage	15J
MK 28 (SUBROC) Component Stowage	15J
MK 28 (SUBROC) Guidance/APU Section Stowage	15J
MK 28 (SUBROC) Motor Magazine	15J
MK 28 (SUBROC) Shop	15B
MK 28 (SUBROC) Warhead Magazine	15J
MK 4 Gun Pod Magazine (ammo installed)	15K
MK 4 Gun Pod Magazine (no ammo installed)	15K
MK 4 Gun Pod Shop	15D
MK 46 & EX 11 Shop	15H
MK 46 & EX 11 Torpedo Magazine	15J
MK 46 Center Section Magazine	15J
MK 46 Engine Cleaning Shop	15G
MK 46 Overhaul Shop	15H
MK 46 Torpedo Magazine	15J
MK 48 Component Stowage	15A
MK 48 Ready Service Stowage	15J
MK 48 Shop	15H
MK 57 Depth Bomb Stowage	15L
Marine Location Marker Magazine	15J
NSSMS Magazine	15K
PHALANX 20mm Magazine	15K
PHALANX Equipment Storeroom	15A
PHOENIX Magazine	15K
PHOENIX Warhead Magazine	15J
PHOENIX Wing & Fin Stowage	15A
Photo Flash Cartridge Magazine	15J
Pyrotechnics Locker	15J
Pyrotechnics Magazine	15J
Pyrotechnics Preparation Room	15J
ROCKEYE II Magazine	15K
SADEYE Magazine	15A
SHRIKE Upper Case Magazine	15K
SIDEWINDER Magazine	15K
SIDEWINDER Nitrogen Launcher Bottle Chrg Sta/Stwg	15M
SIDEWINDER Ready Service	15C
SIDEWINDER Wing & Fin Stowage	15A
SNAKEYE Magazine	15K
SPARROW Magazine	15K
SPARROW Wing & Fin Stowage	15A
SUBROC Igniter Magazine	15J
Saluting Powder Magazine	15J
Small Arms Magazine	15J
Smoke Pyrotechnics Magazine	15J
Special Weapons Magazine (Incl M-1 thru M-5 Shops)	15N
Special Weapons Maintenance Area	15I
Special Weapons Shop	15I
Special Weapons Storeroom	15A
TARTAR Checkout Room	15B
TARTAR Component Storeroom	15B
TARTAR Launcher Loading Room	15B
TARTAR Launcher Space	15A
TARTAR Magazine-Missile Chamber	15L
TARTAR Strikedown Room	15B

APPLICABLE SPACES - Group 15 (continued)

TARTAR Warhead Magazine	15K
Tail Fin Storeroom	15A
Torpedo Afterbody Overhaul Shop	15G
Torpedo Explosive Component Magazine	15J
Torpedo Room	15J
Unitized Cargo - Ammunition Cartridge Room	15L
Universal Weapons Magazine (FAE Facility)	15O
Universal Weapons Magazine (Hypergolic)	15O
Universal Weapons Magazine (Ready Service)	15C
VLS MK 41 Magazine	15P
White Phosphorous Projectile Magazine	15J

3.0 SPECIAL REQUIREMENTS:**1.0 GENERAL REQUIREMENTS:****1.1 Insulation Category:**

Insulation categories shall be in accordance with General Specification 635 requirements for spaces at temperatures estimated.

a) These spaces are not usually ventilated as the prevailing temperature in each space is adequate for its intended use. However spaces that are penetrated by untrunked catapult or main steam piping, that is not of all welded construction or has traps or other fittings, shall have ventilation in accordance with requirements listed below.

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	NM	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	2	---
d. Closure Classification	---	2	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):	10
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation:

Natural supply, if used, shall be from surrounding spaces.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
20mm Belt Link Stowage	3	---
3"/50 Caliber Ready Service Locker	---	---
ASROC Component Storeroom	3	---
ASROC Power Supply Stowage	3	---
Aircraft Guided Missile Component Stowage	3	---
Bomb Tail Stowage	3	---
CIWS Storeroom	3	---
Dummy Weapon Stowage	3	---
Fire Bomb Case Stowage	3	---
MK 48 Component Stowage	3	---
PHALANX Equipment Storeroom	3	---
PHOENIX Wing & Fin Stowage	3	---
SADEYE Magazine	7	---
SIDEWINDER Wing & Fin Stowage	3	---
SPARROW Wing & Fin Stowage	3	---
Special Weapons Storeroom	3	---
TARTAR Launcher Space	7	---
Tail Fin Storeroom	3	---

Criteria Sheet No: 15B

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: H (except MK 28 Shop shall be "F")

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	M	---	M
b. Exhaust/Return Air	M	---	M
c. System Classification	W	---	See 3.0
d. Closure Classification	W	---	See 3.0

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	70°F
b. Design Relative Humidity:	50%	50%
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):	15 (80)	P (80)
b. Supply:	---	---
c. Exhaust/Return:	---	---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

MK 28 (SUBROC) Shop
TARTAR Checkout Room
TARTAR Component Storeroom
TARTAR Launcher Loading Room
TARTAR Strikedown Room

ILLUM NOISE

28 D
28 A
14 ---
7 ---
7 ---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

None

3.2 Applicable only to:

MK 28 (SUBROC) Shop

a) Heat gains from adjoining stowage areas enclosed by expanded metal bulkheads shall be included in total air conditioning load for the compartment, but shall not be considered for system air distribution.

b) Blowout exhaust terminals shall be nine inches above the deck and on opposite side of compartment from blowout supply in order to allow blowout air to "sweep up" Freon contamination. Particular care shall be exercised to ensure a supply of uncontaminated air to the test stand area.

c) Blowout supply weather air intake shall be so located as to minimize the possibility of drawing in diesel exhaust fumes from submarine alongside.

d) System classification shall be "(W)", "Z", or "X". Closure classification shall be "X".

3.3 Applicable only to:

TARTAR Checkout Room
TARTAR Component Storeroom
TARTAR Launcher Loading Room
TARTAR Strikedown Room

a) Exhaust quantity shall be 115 percent of the supply air.

b) Exhaust ductwork shall be watertight from the space to the weather.

c) Exhaust fan shall be located as near the weather outlet as practical.

d) The weather discharge of the exhaust system shall be located in a remote area so that there is no possibility of recirculation into a supply intake or contamination of personnel that might walk by or be stationed in the vicinity of the discharge.

e) System and closure classification shall be "(X)".

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** H**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	80°F	70°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:** ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

SIDEWINDER Ready Service 3 ---
 Universal Weapons Magazine (Ready Service) 7 E

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M/N	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): 8
- b. Supply:
Supply air quantities are to be based on the allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural supply to balance exhaust shall be taken from surrounding spaces, where possible.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

5"/54 Caliber Shop	28 D
MK 4 Gun Pod Shop	28 D

3.0 SPECIAL REQUIREMENTS:**1.0 GENERAL REQUIREMENTS:****3.1 Applicable to all spaces:**

None

1.1 Insulation Category: C**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	2	---
d. Closure Classification	---	2	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	40°F

1.4 Air Quantity:

a. Rate of Change (min):	4
b. Supply: ---	
c. Exhaust/Return: ---	

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

Fire Bomb Solution Storeroom	3 ---
------------------------------	-------

None

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: H

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	H	---
b. Exhaust/Return Air	---	H	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	---	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	135°F	---

1.4 Air Quantity:

a. Rate of Change (min):
See Bureau of Ordnance plan No. 2199376.

b. Supply: ---

c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES: ILLUM NOISE

MK 13 G.H.L.S. (Magazine Inner Structure) 7 ---

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** 0**1.2 HVAC Treatment:**

	A/C	VENT	80
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):	1
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:** ---**2.0 APPLICABLE SPACES:**

	ILLUM	NOISE
MK 46 Engine Cleaning Shop	28	0
Torpedo Afterbody Overhaul Shop	28	0

3.0 SPECIAL REQUIREMENTS:

All spaces having calculated heat gains which result in higher temperatures than the design temperature specified shall be air conditioned to 85°F. Cooling effect of surrounding spaces is considered regardless of how the lower temperature is maintained. A cooling coil on the supply system shall be used for cooling.

Criteria Sheet No: 15H

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F (except MK 13 GMLS shall be "H")

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	See 3.0	---	---
d. Closure Classification	See 3.0	---	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): See 3.0
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
Aircraft Ready Service Magazine	7	---
Emergency Ordnance Disposal Team	28	A
Exploder Stowage & Test Shop	28	D
Explosion Ordnance Disposal Work Center	14	A
MK 13 G.M.L.S. (Magazine Missile Chamber)	---	---
MK 46 & EX 11 Shop	28	D
MK 46 Overhaul Shop	28	D
MK 48 Shop	28	D

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

- a) All spaces shall be "2", except MK 13 GMLS shall be "H".

3.2 Applicable only to:

MK 13 G.M.L.S. (Magazine Missile Chamber)

- a) See Bureau of Ordnance plan No. 2199376.
- b) Ductwork to missile magazine shall be designed to withstand the compartment blast pressure (15 psig).

3.3 Applicable only to:

Exploder Stowage & Test Shop

MK 46 Overhaul Shop

MK 46 & EX 11 Shop

MK 48 Shop

- a) Heat gains from adjoining stowage areas enclosed by expanded metal bulkheads shall be included in total air conditioning load for the compartment, but shall not be considered for system air distribution.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F (except Cargo Hold shall be "H")

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	M	---	M
b. Exhaust/Return Air	M	---	M
c. System Classification	See 3.0	---	See 3.0
d. Closure Classification		---	X

1.3 Air Quality:

	Cooling Season	Heating Season
--	----------------	----------------

a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):		
Cargo Hold (missiles-except liquid fueled)	30 (BO)	P (BO)
All other spaces	15 (BO)	P (BO)

b. Supply: ---

c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
ASROC Workshop	28	D
Cargo Hold (missiles-except liquid fueled)	7	---
Special Weapons Maintenance Area	14	E
Special Weapons Shop	28	D

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) All system classifications shall be "Z", except the Cargo Hold (missiles-except liquid fueled) shall be "W".

3.2 Applicable only to:

ASROC Workshop
Special Weapons Shop

a) Heat gains from adjoining stowage areas enclosed by expanded metal bulkheads shall be included in total air conditioning load for the compartment, but shall not be considered for system air distribution.

Criteria Sheet No: 15J

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: H

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	---	M
b. Exhaust/Return Air	---	---	M
c. System Classification	---	---	See 3.0
d. Closure Classification	---	---	X See 3.0

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	100°F See 3.0	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

- a. Rate of Change (min):
See 3.0.
- b. Supply: ---
- c. Exhaust/Return:

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

2.75" Rocket Head Magazine	7	---
40mm Ammunition Magazine	7	---
5" Rocket Head Magazine	7	---
ASROC Motor Magazine	7	---
Arming Devices Magazine	7	---
Aviation Ejection Seat Rocket Magazine	7	---
BRIGHT EYE Magazine	7	---
CM Rocket Motor Magazine	7	---
Cargo Fuses Magazine	7	---
Cargo Hold (conventional ammunition)	7	---
Demolition Explosive Magazine	7	---
Detonator Locker	3	---
Detonator Magazine	7	---
Explosive Section Magazine	7	---
Flare Magazine	7	---
Fuse Magazine	7	---
MK 24 Flare Stowage	7	---
MK 28 (SUBROC) Component Stowage	7	---
MK 28 (SUBROC) Guidance/APU Section Stwg	7	---
MK 28 (SUBROC) Motor Magazine	7	---
MK 28 (SUBROC) Warhead Magazine	7	---
MK 46 & EX 11 Torpedo Magazine	7	---
MK 46 Center Section Magazine	7	---
MK 46 Torpedo Magazine	7	---
MK 48 Ready Service Stowage	7	---
Marine Location Marker Magazine	7	---
PHOENIX Warhead Magazine	7	---

Photo Flash Cartridge Magazine	7	---
Pyrotechnics Locker	3	---
Pyrotechnics Magazine	7	---
Pyrotechnics Preparation Room	7	---
SUBROC Igniter Magazine	7	---
Saluting Powder Magazine	7	---
Small Arms Magazine	7	---
Smoke Pyrotechnics Magazine	7	---
Torpedo Explosive Component Magazine	7	---
Torpedo Room	7	---
White Phosphorous Projectile Magazine	7	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) All ammunition spaces having calculated heat gains which result in higher temperatures than the design temperature specified shall be air conditioned to 85°F, with gravity coils used for cooling. Cooling effect of surrounding spaces is considered regardless of how the lower temperature is maintained.

b) Where manning of these spaces is required for striking of ammunition during general quarters, provide blowout to limit CO₂ build up. The quantity of blowout air required for each compartment is determined by investigating the possibilities of CO₂ build up, using the formula: $N=0.0034V$. Where V = Gross volume of space (cubic feet).

If the number of men in a compartment is equal to or greater than N, provide a 10 minute rate of change. If the number of men in a compartment is less than N, provide a 30 minute rate of change.

c) All spaces containing pyrotechnics shall have blowout ventilation and shall be served by independent ventilation systems.

d) Preferred damage control classification for system is "X". If an "X" system is not readily available, a "(W)" system is acceptable.

e) Due to the limited period of blowout, capacities of blowout branches should not be included in determining total fan capacity of a class "(W)" system, but shall be included for a class "X" system.

3.2 Applicable only to:

Cargo Hold (conventional ammunition)

a) These spaces shall have a 30 minute rate of change blowout from an independent class "X" mechanical supply and exhaust system.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: H

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	---	M
b. Exhaust/Return Air	---	---	M
c. System Classification	See 3.1g for exception	---	See 3.0
d. Closure Classification	---	---	X

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	100°F See 3.0	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

- a. Rate of Change (min):
See 3.1b
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

	ILLUM	NOISE
2.75" Rocket Launcher Magazine	7	---
2.75" Rocket Warhead Magazine	7	---
20mm Ammunition Magazine	7	---
20mm Belting Room	7	---
20mm Ready Service Locker	---	---
20mm Ready Service Room	3	---
3"/50 Caliber Ammunition Magazine	7	---
3"/50 Caliber Handling Room	7	---
3"/50 Caliber Ready Service Room	3	---
5" Rocket Launcher Magazine	7	---
5" Rocket Warhead Magazine	7	---
5"/38 Caliber Handling Room	7	---
5"/38 Caliber Magazine	7	---
5"/38 Caliber Powder Magazine	7	---
5"/38 Caliber Ready Service Magazine	7	---
5"/54 Caliber Handling Room	7	---
5"/54 Caliber Powder Magazine	7	---
5"/54 Caliber Projectile Magazine	7	---
5"/54 Caliber Projectile Stowage	7	---
50 Caliber Magazine	7	---
Bomb Magazine (Unfused)	7	---
CBU Magazine	7	---
CIWS Magazine	7	---
Cargo Bomb Fuse/Primer Detonator Magazine	7	---
Cartridge Actuated Device Magazine	7	---
MK 4 Gun Pod Magazine (ammo installed)	10	---
MK 4 Gun Pod Magazine (no ammo installed)	10	---
NSSMS Magazine	7	---

PHALANX 20mm Magazine	7	---
PHOENIX Magazine	7	---
ROCKEYE II Magazine	7	---
SHRIKE Magazine	7	---
SIDEWINDER Magazine	7	---
SNAKEYE Magazine	7	---
SPARROW Magazine	7	---
TARTAR Warhead Magazine	7	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) Spaces having calculated heat gains which result in higher temperatures than the design temperature specified shall be air conditioned to 85°F, with gravity coils used for cooling. Cooling effect of surrounding spaces is considered regardless of how the lower temperature is maintained.

b) The quantity of blowout air required for each compartment is determined by investigating the possibilities of CO₂ build up, using the formula:
 $N=0.0034V$

Where V = Gross volume of space (cubic feet).

If the number of men in a compartment is equal to or greater than N, provide a 10 minute rate of change. If the number of men in a compartment is less than N, Provide a 30 minute rate of change.

c) For blowout arrangements, see Figure No. 15A.

d) Equipment for Handling Rooms and Ready Service Rooms shall be selected on 80 percent of calculated heat load. This load factor is used because the compartment temperature will be maintained lower than 85°F when full light, personnel and equipment loads are not developed.

e) Preferred damage control classification for system is "X". If an "X" system is not readily available a "(W)" system is acceptable.

f) Due to the limited period of blowout, capacities of blowout branches should not be included in determining total fan capacity of a class "(W)" system, but shall be included for a class "X" system.

g) Compartments with weather access do not require blowout ventilation.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** H**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	---	M
b. Exhaust/Return Air	---	---	M
c. System Classification	---	---	See 3.0
d. Closure Classification	---	---	X

1.3 Air Quality:	Cooling Season	Heating Season
-------------------------	-----------------------	-----------------------

a. Design Temperature:	100°F	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

a. Rate of Change (min):	15 (BO)	P (BO)
b. Supply:	---	
c. Exhaust/Return:	---	

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:**

A minimum negative pressure of 0.25 inches of water pressure shall be maintained when access doors are closed.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

ASROC Magazine	7	---
ASROC Missile Magazine	7	---
Blasting Cap Magazine	7	---
Cargo Hold (special weapons)	7	---
Cartridge Room	7	---
Chemical Gun Ammunition Magazine	7	---
High Explosives Magazine	7	---
MK 57 Depth Bomb Stowage	7	---
TARTAR Magazine-Missile Chamber	7	---
Unitized Cargo-Ammunition Cartridge Room	7	---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Spaces having calculated heat gains which result in higher temperatures than the design temperature specified shall be air conditioned to 85°F, with gravity coils used for cooling. Cooling effect of surrounding spaces is considered regardless of how the lower temperature is maintained.

b) For all calculations - include heat transfer from stowage areas adjoined to space by expanded metal bulkheads.

c) Preferred damage control classification for system is "X". If an "X" system is not readily available however, a "(W)" system is acceptable.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BD
a. Supply Air	---	---	NH
b. Exhaust/Return Air	---	---	M
c. System Classification	---	---	See 3.0
d. Closure Classification	---	---	X

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	---	40°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

a. Rate of Change (min):	8 (80)
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation: ---
 Natural supply, if used, shall be taken directly from the weather.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:**ILLUM NOISE**

SIDEWINDER Nitrogen Launcher Bottle	3	---
Charging Station & Stowage		

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) Preferred damage control classification for system is "X". If an "X" system is not readily available however, a "(W)" system is acceptable.

b) Heating season temperature shall be maintained when blowout supply is operational.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: H****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	---	M
b. Exhaust/Return Air	---	---	M
c. System Classification	---	---	(X)
d. Closure Classification	---	---	(X)

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	100°F	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

a. Rate of Change (min):	15 (BO)	P (BO)
b. Supply:	---	
c. Exhaust/Return:	---	

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:**

A minimum negative pressure of 0.25 inches of water pressure shall be maintained when access doors are closed.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Special Weapons Magazine (including M-1 thru M-5 shops) 7 0

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Spaces having calculated heat gains which result in higher temperatures than the design temperature specified shall be air conditioned to 85°F. Cooling effect of surrounding spaces is considered regardless of how the lower temperature is maintained.

b) The weather discharge of the exhaust system shall be located in a remote area so that there is no possibility of recirculation into a supply intake or contamination of personnel that might walk by or be stationed in the vicinity of the discharge.

c) Exhaust ductwork shall be watertight from the space served to the weather.

d) Exhaust fans shall be located as near the weather outlet as practical.

e) Independent supply and exhaust systems shall be utilized for this space except that blowout for other magazines may also be served. Fan selection shall be based on largest individual blowout quantity required.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** H**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	---	NM
b. Exhaust/Return Air	---	---	M
c. System Classification	---	---	(X)
d. Closure Classification	---	---	(X)

	Cooling Season	Heating Season
a. Design Temperature:	100°F	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.3 Air Quality:

a. Rate of Change (min):	See 3.0	P (BO)
b. Supply:	---	
c. Exhaust/Return:	---	

1.4 Air Quantity:**1.5 Air Distribution/Circulation:** ---**1.6 Air Pressurization:** ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Cargo Hold (missiles-liquid fueled)	7	---
Fuel Air Explosive (FAE) Magazine	7	---
Universal Weapons Magazine (FAE facility)	7	---
Universal Weapons Magazine (Hypergolic)	7	---

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

a) Spaces having calculated heat gains which result in higher temperatures than the design temperature specified shall be air conditioned to 85°F, with gravity coils used for cooling. Cooling effect of surrounding spaces is considered regardless of how the lower temperature is maintained.

b) Blowout ventilation shall be provided for magazines in accordance with the following:

1. The blowout ventilation system will consist of mechanical exhaust and natural supply ducts. Provide mechanical exhaust emergency blowout based on a 15 minute rate of change for each space on auxiliaries and a 5 minute rate of change for each space on combatants. If the exhaust system develops insufficient pressure or the ducts become impracticably large, mechanical supply may be substituted for natural supply. In this event, the quantity of mechanical exhaust shall be 115 percent of the mechanical supply.

2. Fans and ductwork shall be independent of other systems. Emergency blowout systems may serve a group of liquid propellant spaces. If the system serves more than one space, fan capacity shall be based on largest compartment served.

3. The weather discharge shall be located in an area remote from any supply intake or walkways so as to minimize the possibility of contaminating personnel.

4. All exhaust ductwork shall be watertight from the space served to the weather and tested to the specified strength test pressure of the compartment served.

5. Non-sparking type centrifugal fans, located outside the compartment served and as near the weather outlet as practical shall be used for exhaust systems.

6. The blowout fan shall be classified "(X)" and shall be wired to a class "U" power panel so that power is available in case emergency use is required. The fan control switch shall be located near the remote supply and exhaust closure controls.

7. The magazine shall be provided with both supply and exhaust blowout closures located inside the space. The closure shall be operated from inside and outside the space served and shall be classified "(X)".

8. If mechanical supply is used, the corresponding supply and exhaust fans shall be connected to a single source of power with the provision that if one fan fails the other is shut off. Two speed fans shall be wired for high speed only.

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** H**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	M	M
b. Exhaust/Return Air	M	M	M
c. System Classification	W	(W)	X
d. Closure Classification	W	See 3.0	

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	80°F	70°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):	See 3.0
b. Supply: ---	
c. Exhaust/Return: ---	

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:** ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

5"/54 Caliber Loader Drum Room	7 E
VLS MK 41 Magazine	14 E

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

None

3.2 Applicable only to:**VLS MK 41 Magazine**

a) Use 33,270 BTU/Hr. as the design cooling season solar radiation heat gain through the top of the "A Size" VLS module. Use 53,200 BTU/Hr. as the design cooling season solar radiation heat gain through the top of the "B Size" VLS module (not including coaming skirt around "A and B Size" module edge.) Assume that the entire module top (not including coaming skirt) is an uninsulated horizontal bare metal boundary when calculating heating season heat loss.

b) Insulate all module station boundaries; with the exception of the module top (discussed in a.), and bulkheads in way of radiation shielding materials; in accordance with requirements for insulating category "H" spaces. Include insulation of the horizontal coaming skirt surrounding the module top (installed between the module and the top of the module station coaming.)

c) Use 78,785 BTU/Hr. as the design heat dissipation to air from the combination of equipment and lighting for "B Size" VLS modules. Use 39,393 BTU/Hr. as the design heat dissipation to air from the combination of equipment and lighting for "A Size" VLS modules.

d) Do not consider heating effect of equipment heat dissipation to air or hatch deicing heaters when determining heating season space heating requirements.

e) Provide two separate recirculating systems dedicated to VLS magazine service. Locate one system in each VLS module fan room so that the systems supply conditioned air to the VLS magazine from both the port and starboard sides. Recirculating supply and return ducting from fan room boundaries (watertight) to the module station bulkhead (watertight) shall be of watertight construction. Locate no system serving spaces other than the VLS magazine in VLS module fan rooms. Design each system so that the fan pushes air through the cooling coil and reheater. Incorporate blowout exhaust and replenishment exhaust into the system on the opposite side of the magazine. Use 100 CFM as the replenishment air quantity. Divide compartment cooling and heating loads equally between the two recirculating systems.

f) Design recirculating systems for two modes of operation, normal recirculating mode and blowout mode. Use remote operated, motorized watertight closures and volume control dampers to effect the change in system operation from one mode to the other. The motorized closures and dampers shall be capable of being operated simultaneously by a toggle switch located in the Security Station. Motorized closures and dampers shall be capable of being operated by hand in case of control or powering system failure. Provide manually operated closures on replenishment supply and exhaust to be secured during blowout mode. Design the recirculating systems for the cooling and heating loads calculated during normal recirculating mode. Design the

Criteria Sheet No: 15P (continued)

recirculating systems for a 50°F minimum heating season magazine supply air temperature during blowout mode.

1. Normal recirculating mode is in effect when the recirculating systems recirculate magazine air with the blowout mode secured. The magazine remains under full protection and pressurizing effect of the TPS system.

2. Blowout mode is in effect when one recirculating fan draws the blowout supply air quantity from the weather, mixes it with a reduced return air quantity before it is conditioned, and delivers the conditioned mixture to the magazine through recirculating system supply terminals. The other recirculating fan draws a normal return air quantity from the magazine, but exhausts a portion equal to the blowout supply to the weather as blowout exhaust. The remainder is conditioned and supplied to the magazine as a reduced recirculating supply quantity.

g) Provide a 15 minute rate of change for the blowout system. For rate of change purposes, the volume of the VLS module includes the total volume inside the module and module station.

h) Provide each recirculating system with a separate heating and cooling thermostat mounted on the face of the return terminal to control operation of the reheater and the cooling coil chilled water solenoid valve. To minimize heating and cooling system cycling, set temperature set points for one thermostat approximately 3°F above the other.

i) The blowout systems shall be independent systems serving only the VLS MK 41 magazines.

j) Use registers with double deflection louvers for recirculating system supply terminals. Lock louvers in place to direct air delivery along walkways between VLS canisters and away from heat sensing devices (HSD) for magazine sprinkling system.

k) Provide fragment protection for all module station bulkhead duct penetrations as specified in Specification Section 072.

3.3 Applicable only to:

5"/54 Caliber Loader Drum Room

a) Provide a separate recirculating air conditioning system for each Loader Drum Room.

1. System to be sized to include heat dissipation from Gun Mount at "Mount Assigned" Condition - See NAVORD OP 3984.

b) Provide 75 CFM supply and exhaust replenishment air to Loader Drum Room from "(W)" ventilation systems. Closures on the replenishment system shall be class (W).

c) Provide a separate replenishment (pressurization) supply system for each Loader Drum Room system. This system shall be designed:

1. to provide 2300 CFM during gun firing for the Gun Mount Purge System.

2. to cool 2300 CFM via a chilled water cooling coil. The air is to be cooled to an approximate off-coil temperature of 51.5°F Dry Bulb.

3. to heat weather air via a preheater and reheater to 70°F Dry Bulb.

d) The intakes for replenishment (pressurization) supply system shall be located so as to prevent ingestion of missile gases.

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: C

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

	Cooling Season	Heating Season
1.3 Air Quality:		
a. Design Temperature:	100°F	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): 6
- b. Supply:

Supply air quantities are to be based on the allowable temperature rise over weather air temperature or the minimum rate of change, whichever is greater.
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

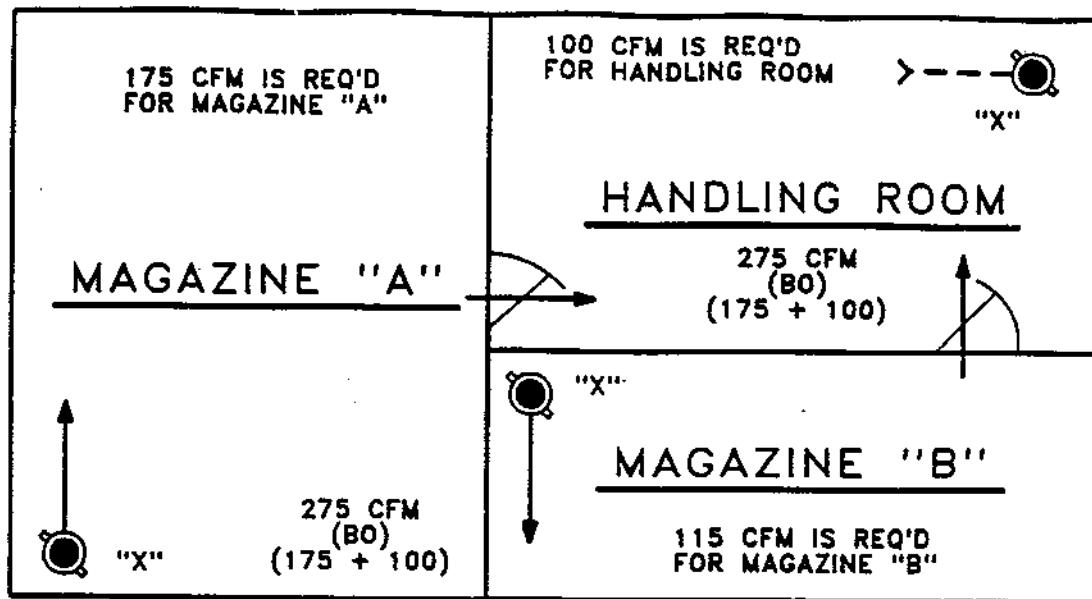
ILLUM NOISE

Flare Handling Room 14 0

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

- a) The supply and exhaust systems shall be independent systems.



Ventilation Typical Blow-out Arrangement
For Magazine Spaces

Figure No. 15A

1. Blow-out arrangements consist of one supply and one exhaust branch for each compartment, except where arrangement and location of compartments permit one exhaust branch to serve a group of spaces (see diagram above). Blow-out will be accomplished by opening required supply and exhaust closures and access door between magazine and compartment containing exhaust branch.
2. Blow-out supply and exhaust quantities will depend on the arrangement of spaces. Only one magazine will be blown out at the time. If the exhaust branch is in a common handling room, as shown above, size branch for sum of handling room quantity plus largest quantity of magazine group; supply to each magazine must include allowance for handling room. If exhaust terminal is in a common unmanned passageway, size exhaust branch to equal largest quantity of group. Size supply branches to meet the individual compartment requirements.

Due to the limited period of blow-out, capacities of blow-out branches should not be included in determining fan capacity of system.

Preface to Design Criteria - Group 16
FBM spaces

Most FBM spaces are air conditioned. Note that some spaces require a relative humidity level of 50 percent during both cooling and heating seasons.

APPLICABLE SPACES - GROUP 16

Compartment Names	Sheet No.
APIS Checkout Area	16C
Exercise Warhead Stowage	16D
FBM Checkout Area	16C
FBM Components Storeroom	16B
FBM Elevator Trunk	16D
FBM Launching & Handling Repair Parts Storeroom	16B
FBM Module Checkout Shop	16C
FBM Spare Parts Stowage	16B
FBM Stowage Area	16A
Guidance Package Checkout & Repair Shop	16C
Guidance System Alignment Area	16C
Hydraulic Package Checkout Area	16C
Launcher Gas Generator Stowage Area	16D
Launcher Power Equipment Room	16B
Launcher Tube Closure Stowage	16B
Launcher Tube Diaphragm Stowage	16B
Missile Equipment Storeroom	16B
Missile Handling Equipment Storeroom	16D
Navigation Equipment Storeroom	16B
Polaris/Poseidon Operational Readiness Inst (PORI)	16C
Re-entry Body Shop & Stowage Area	16A
Re-entry System & Missile Component Storeroom	16B
Re-entry System Component Storerooms	16B
Target Data Card Storeroom	16B

Criteria Sheet No: 16A

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: H

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	M	---	M
b. Exhaust/Return Air	NH	---	M
c. System Classification	W	---	See 3.0
d. Closure Classification	W	---	X

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	80°F	70°F
b. Design Relative Humidity:	50%	50%
c. Assumed Temperature:	---	---

1.4 Air Quantity:

a. Rate of Change (min):	15 (80)	9 (80)
b. Supply:	---	
c. Exhaust/Return:	---	

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:

ILLUM NOISE

FBM Stowage Area	28	---
Re-entry Body Shop & Stowage Area	28	---

3.0 SPECIAL REQUIREMENTS:

3.1 Applicable to all spaces:

a) Preferred damage control classification for blowout system is "X". If an "X" system is not readily available however, a "(W)" or "2" system is acceptable.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** F**1.2 HVAC Treatment:**

	A/C	VENT	80
a. Supply Air	M	---	---
b. Exhaust/Return Air	NM	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	55%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

FBM Components Storeroom	7	---
FBM Launching & Handling Repair Parts Strm	7	---
FBM Spare Parts Stowage	7	---
Launcher Power Equipment Room	14	---
Launcher Tube Closure Stowage	7	---
Launcher Tube Diaphragm Stowage	7	---
Missile Equipment Storeroom	7	---
Navigation Equipment Storeroom	7	---
Re-entry System & Missile Component Strm	7	---
Re-entry System Component Storerooms	7	---
Target Data Card Storeroom	7	---

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:** F**1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	M	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	80°F	70°F
b. Design Relative Humidity:	50%	50%
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization:** ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

APTS Checkout Area	28	A
FBM Checkout Area	28	A
FBM Module Checkout Shop	28	A
Guidance Package Checkout & Repair Shop	28	A
Guidance System Alignment Area	28	A
Hydraulic Package Checkout Area	28	A
Polaris/Poseidon Operational Readiness Instrumentation (PORI) Shop	28	A

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category:**

Insulation categories shall be in accordance with General Specifications 635 requirements for spaces at temperatures estimated.

1.2 HVAC Treatment:

	A/C	VENT	BO
a. Supply Air	---	NM	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	Z	---
d. Closure Classification	---	Z	---

1.3 Air Quality:

	Cooling Season	Heating Season
a. Design Temperature:	---	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

a. Rate of Change (min):	10
b. Supply:	---
c. Exhaust/Return:	---

1.5 Air Distribution/Circulation:

Natural supply, if used, shall be taken from surrounding spaces.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Exercise Warhead Stowage	3	---
FBM Elevator Trunk	---	---
Launcher Gas Generator Stowage Area	3	---
Missile Handling Equipment Storeroom	3	---

3.0 SPECIAL REQUIREMENTS:

These spaces are not usually ventilated as the prevailing temperature in each space is adequate for its intended use. However, spaces that are penetrated by untrunked main steam piping, that is not of all welded construction or has traps or other fittings, shall have ventilation in accordance with requirements listed above.

Preface to Design Criteria - Group 17
Airborne Systems Support Center Spaces,
And Integrated Operational Intelligence Spaces

Most of these spaces are air conditioned "clean"
spaces requiring a positive pressure.

APPLICABLE SPACES - GROUP 17

Compartment Name	Sheet No.
Administrative Office (CVIC)	17B
Air Intelligence Office (I.O.I.)	17B
Air Intelligence Officer Office (I.O.I.)	17B
Analysis Area (CVIC)	17B
Aviation Mission Planning and Briefing Room	17B
CV Intelligence Center	17B
Camera Maintenance Shop (ASSC) S"C" Shop	17A
Chemical Mixing Room (I.O.I.)	17C
Countermeasure Maintenance Shop (ASSC) S"A" Shop	17B
Debriefing Room (CVIC)	17B
Drafting Room (CVIC)	17B
Dust Control (I.O.I. Spaces)	17E
Dust Removal Passing Box (I.O.I.)	17E
Dust Trap (ASSC)	17E
Electronic Data Processing (CVIC)	17B
Electronic Data Processing (I.O.I.)	17B
Film Evaluation Room (ASSC)	17A
Film Handling Dark Room (I.O.I.)	17B
Film Loading Room	17A
Film Loading Room (ASSC) S"D" Shop	17A
Film Processing Room (I.O.I.)	17B
Film Titler Room (I.O.I.)	17B
I.O. Office (CVIC)	17B
I.O.I. Power Room	17D
I.O.I. Water Supply Equipment Room	17D
Imagery Interpretation Room (CVIC)	17B
Intelligence Integration Room (CVIC)	17B
Joint Intelligence Center	17B
Mission Planning & Briefing (CVIC)	17B
Modular Stowage & EF Shop (ASSC) S"B" Shop	17B
Multisensor Interpretation Room (I.O.I.)	17B
Photo Chemical Mixing Room (CVIC)	17C
Photographic Dark Room (CVIC)	17B
Photographic Light Room (CVIC)	17B
Positive Transparency Printing Room (I.O.I.)	17B
SAO Reading Room (CVIC)	17B
SI Reading Room (CVIC)	17B
Security Control (I.O.I.)	17B
Stowage and Retrieval (I.O.I.)	17B
Vestibule (CVIC Spaces and ASSC Shops)	17E
Vestibule (I.O.I. and ASSC Shops)	17E

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: G****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NH	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	75±5°F	75±5°F
b. Design Relative Humidity:	50%	50%
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be to surrounding spaces of the complex.

1.6 Air Pressurization:

A positive pressure is to be maintained at all times, with access doors closed as follows: Shop "C" 0.20 inch of water, Shop "D" and Film Evaluation Room 0.30 inch of water.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Camera Maintenance Shop (ASSC) S"C" Shop	28	8
Film Evaluation Room (ASSC)	28	8
Film Loading Room	28	8
Film Loading Room (ASSC) S"D" Shop	28	8

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: F****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	M	---	---
b. Exhaust/Return Air	NH	---	---
c. System Classification	W	---	---
d. Closure Classification	W	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	80°F	65°F
b. Design Relative Humidity:	50%	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Natural return, if used, shall be via surrounding passages.

1.6 Air Pressurization:

A positive pressure is to be maintained at all times, with access doors closed as follows: Shop "A" 0.20 inch of water, Shop "B" 0.10 inch of water, all other spaces 0.25 minimum.

2.0 APPLICABLE SPACES:**ILLUM NOISE**

Administrative Office (CVIC)	28	A
Air Intelligence Office (I.O.I.)	28	A
Air Intelligence Officer Office (I.O.I.)	28	A
Analysis Area (CVIC)	21	A
Aviation Mission Planning and Briefing Rm	28	A
CV Intelligence Center	28	A
Countermeasure Maintenance Shop (ASSC)	28	B
S"A" Shop		
Debriefing Room (CVIC)	21	A
Drafting Room (CVIC)	21	A
Electronic Data Processing (CVIC)	28	A
Electronic Data Processing (I.O.I.)	28	A
Film Handling Dark Room (I.O.I.)	28	A
Film Processing Room (I.O.I.)	28	A
Film Titler Room (I.O.I.)	28	A
IO Office (CVIC)	28	A
Imagery Interpretation Room (CVIC)	21	A
Intelligence Integration Room (CVIC)	21	A
Joint Intelligence Center	28	A
Mission Planning & Briefing (CVIC)	21	A
Modular Stowage & EF Shop (ASSC) S"B" Shop	28	B
Multisensor Interpretation Room (I.O.I.)	28	A
Photographic Dark Room (CVIC)	21	A
Photographic Light Room (CVIC)	21	A

Positive Transparency Printing Room (I.O.I.)	28	A
SAO Reading Room (CVIC)	21	A
SI Reading Room (CVIC)	21	A
Security Control (I.O.I.)	28	A
Stowage and Retrieval (I.O.I.)	28	A

3.0 SPECIAL REQUIREMENTS:**3.1 Applicable to all spaces:**

None

3.2 Applicable only to:**Electronic Data Processing (IOIC)**

a) All vents, ducts, louvers, or other ventilation perimeter openings with cross sectional areas greater than 96 square inches shall be protected at the perimeter with security bars welded in the coaming. The bars shall be half inch round bars spaced such that the resultant area divisions do not exceed 96 square inches.

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: D****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	---	65°F
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	100°F	---

1.4 Air Quantity:

- a. Rate of Change (min): 1
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation:

Air is to be exhausted through a hood over the chemical mixing tank. The hoods shall be in accordance with the latest edition of "Industrial Ventilation - A Manual of Recommended Practice" by the Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan 48902 exhausting directly to the weather.

1.6 Air Pressurization: ---**2.0 APPLICABLE SPACES:****ILLUM NOISE**

Chemical Mixing Room (I.O.I.)	28 A
Photo Chemical Mixing Room (CVIC)	28 A

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:**1.1 Insulation Category: C****1.2 HVAC Treatment:**

	A/C	VENT	BO
a. Supply Air	---	M	---
b. Exhaust/Return Air	---	M	---
c. System Classification	---	(W)	---
d. Closure Classification	---	(W)	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	100°F	P
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	40°F

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---**1.6 Air Pressurization: ---****2.0 APPLICABLE SPACES:****ILLUM NOISE**

1.0.1. Power Room	7 D
1.0.1. Water Supply Equipment Room	7 D

3.0 SPECIAL REQUIREMENTS:

None

1.0 GENERAL REQUIREMENTS:

1.1 Insulation Category: F

1.2 HVAC Treatment: None

	A/C	VENT	BO
a. Supply Air	---	---	---
b. Exhaust/Return Air	---	---	---
c. System Classification	---	---	---
d. Closure Classification	---	---	---

1.3 Air Quality:	Cooling Season	Heating Season
a. Design Temperature:	---	---
b. Design Relative Humidity:	---	---
c. Assumed Temperature:	---	---

1.4 Air Quantity:

- a. Rate of Change (min): ---
- b. Supply: ---
- c. Exhaust/Return: ---

1.5 Air Distribution/Circulation: ---

1.6 Air Pressurization: ---

2.0 APPLICABLE SPACES:	ILLUM	NOISE
Dust Control (I.O.I. Spaces)	---	---
Dust Removal Passing Box (I.O.I.)	---	---
Dust Trap (ASSC)	---	---
Vestibule (CVIC Spaces and ASSC Shops)	7	---
Vestibule (I.O.I. and ASSC Shops)	7	---

INDEX

COMPARTMENT NAME	SHEET NO.	COMPARTMENT NAME	SHEET NO.
20mm Ammunition Magazine	15K	Aircraft Control Surfaces Stowage	13J
20mm Belt Link Stowage	15A	Aircraft Crane Machinery Room	3I
20mm Belting Room	15K	Aircraft Engine Shop	4C
20mm Ready Service Locker	15K	Aircraft Guided Missile Component Stowage	15A
20mm Ready Service Room	15K	Aircraft Ready Service Magazine	15H
2.75" Rocket Head Magazine	15J	Aircraft Strtg, Cooling, & Elec Servicing Equip Rm	3B
2.75" Rocket Launcher Magazine	15K	Aircraft Weapons Checkout Room	5A
2.75" Rocket Warhead Magazine	15K	Aviation Weapons Movement Control Room	5A
3"/50 Caliber Ammunition Magazine	15K	Aircraft Wheel and Tire Stowage	13J
3"/50 Caliber Handling Room	15K	Alcohol Storeroom	13A
3"/50 Caliber Ready Service Locker	15A	Alkaline Battery Shop	4Q
3"/50 Caliber Ready Service Room	15K	Analysis Area (CVIC)	17B
400 Hertz Converter Room	3J	Analysis Room (Noise & Vibration Test Room)	4A
400 Hertz Motor Generator Room	3L	Anchor and Line Handling Space	12A
400 Hertz Room	3J	Anchor Handling Equipment Storeroom	13J
40mm Ammunition Magazine	15J	Anesthetist Work Room	9A
50 Caliber Armory	4A	Antenna Test Tank Pump Room	3A
50 Caliber Magazine	15K	AN/SPN-35 Radar Dome	5A
5" Rocket Head Magazine	15J	AN/SPN-41 Radome (Azimuth)	5G
5" Rocket Launcher Magazine	15K	AN/SPN-41 Radome (Elevation)	5G
5" Rocket Warhead Magazine	15K	AN/SPS-49 Cooling Room	5A
5"/38 Caliber Handling Room	15K	AN/SPS-49 Radar Room	5A
5"/38 Caliber Magazine	15K	AN/SPS-55 MK 99 Transmitter Room	5A
5"/38 Caliber Powder Magazine	15K	APTS Checkout Area	16C
5"/38 Caliber Ready Service Magazine	15K	Arming Devices Magazine	15J
5"/54 Caliber Handling Room	15K	Armory	4A
5"/54 Caliber Loader Drum Room	15P	Array Room	5A
5"/54 Caliber Powder Magazine	15K	Arresting Gear Damper Room	3A
5"/54 Caliber Projectile Magazine	15K	Arresting Gear Machinery Room	3D
5"/54 Caliber Projectile Stowage	15K	Arresting Gear Shop	4C
5"/54 Caliber Shop	15D	Arresting Gear Storeroom	13B
Access	12E	Arresting Gear Terminal Socket Pouring Shop	4C
Access Trunk	12E	ASROC Component Storeroom	15A
Access Trunk (Main Machinery Spaces)	2C	ASROC Magazine	15L
Acid Storeroom	13G	ASROC Missile Magazine	15L
Addressograph Room	4A	ASROC Motor Magazine	15J
Administrative Office (CVIC)	17B	ASROC Power Supply Stowage	15A
AEAE Room	12E	ASROC Workshop	15I
AEAE Room And Aviation Storeroom	13J	Athletic Gear Storeroom	13B
Aegis Radar Room	5A	Atrium	12A
Aerial Picture Process Room	10B	Audio Amplifier Room	5A
AEW and IFF Room	5A	Audiometric Test Equipment Room	9A
AFFF Drum Stowage	13J	Audiometry Room	9A
AFFF Station	12A	Automatic Data Processing Room	4A
Aft Repair 3 & Secondary Damage Control Station	5A	Automatic Stanchion Machinery Room	3A
Air Conditioning Machinery Room	3F	Auxiliary Fuel Tank Stowage	13J
Air Filter Cleaning Shop	4H	Auxiliary Machinery and Deballasting Compressor Rm	2C
Air Intake	12E	Auxiliary Machinery Room	2C
Air Intelligence Office (I.O.I.)	17B	Auxiliary Radio Room	5A
Air Intelligence Officer Office (I.O.I.)	17B	Aviation Arresting Gear Shop	4C
Air Intelligence Storeroom	13J	Aviation Chart Storeroom	13D
Air Lock	12A	Aviation Composite Material Workshop	4B
Air Navigation Equipment Room	5A	Aviation Ejection Seat Rocket Magazine	15J
Air Objective Folder Storeroom	13D	Aviation Electronics Storeroom	13J
Air Operations Office	5A	Aviation Engine Shop	4C
Air Operations (CIC)	5A	Aviation Engine Test Stand Storeroom	13J
Air Terminal	6A	Aviation Engine Trunk	12A
Air Terminal Waiting Room	6A	Aviation Engines Storeroom	13J
Air Warfare	5A	Aviation Flammable Liquids Locker	13A
Aircraft Air Starting and Cooling Machinery Room	3E	Aviation Flammable Liquids Storeroom	13A
Aircraft Air Strtg & Cooling Machinery Control Rm	5A	Aviation Flight Gear Storeroom	13J

COMPARTMENT NAME	SHEET NO.
Aviation Flotation Equipment Shop	4K
Aviation Fuel Equipment Shop	11C
Aviation Fuel Maintenance Shop	11C
Aviation Ground Support Equip & Bomb Truck Stowage	13J
Aviation Gun Cleaning Room	4N
Aviation Gun System Shop	4N
Aviation Helo Workshop	4A
Aviation Hydraulic Pneumatic Shop (Clean Room)	4F
Aviation Hydraulic Pneumatic Shop (Dirty Room)	4B
Aviation Hydraulic Pneumatic Shop (Test/Clean Rm)	4F
Aviation Hydraulic Shop	4C
Aviation Internal Combustion Engine Shop	4C
Aviation Launching Accessories Shop	4C
Aviation Maint Support Package Storeroom	13J
Aviation Mission Planning and Briefing Room	17B
Aviation Mobile Equipment Shop	4C
Aviation Nondestructive Test & Inspection Shop	4A
Aviation Onboard Oxygen Generator System Shop	4B
Aviation Ordnance Control Station	5A
Aviation Ordnance Shop	4C
Aviation Ordnance Storeroom	13J
Aviation Oxygen Equipment Shop	4B
Aviation Paint Mixing and Issue Room	13A
Aviation Parachute Equipment Shop	4K
Aviation Photo Interpretation Storeroom	13D
Aviation Photo Lab, Copying, Sorting, & Filing Rm	10B
Aviation Pneumatic Shop	4C
Aviation Squadron Maintenance Shop	4C
Aviation Squadron Work Center	4B
Aviation Storeroom (Bomb Hoist)	13A
Aviation Storeroom (Catapult Bridles)	14H
Aviation Storeroom (Catapult Spares)	14H
Aviation Storeroom (Flammable)	13A
Aviation Storeroom (Nonflammable)	13J
Aviation Structures Shop	4C
Aviation Suit Laundry (Air Conditioned)	4J
Aviation Suit Laundry (Ventilated)	4I
Aviation Survival Equipment Shop	4K
Aviation Tire and Wheel Shop	4C
Aviation Tool Issue Room	4C
Aviation Weapons Checkout Shop	5A
Aviation Weapons Control Computer Room	5D
Aviation Weapons Movement Control Room	5A
Aviation Weapons Movement Control Station	5A
Aviation Weapons Movement Control & Aviation Wpns	5A
Avionics Equipment Cleaning Shop	4B
Avionics Shop	4A
Avionics Storeroom	13J
A.D.P. Motor Generator Room	3L
Bacteriological Laboratory	9A
Baggage Rooms	13J
Bakery	8A
Bakery Storeroom	8E
Balloon Inflation Room	12D
Band Room	13J
Barber Shop	4A
Barricade Stanchion Hydraulic Control Room	3H
Barricade Storeroom	13J
Bath (all except Ward & Quiet Room)	7A
Bathymograph Room	5A
Battery Charging Station	3L
Battery Storeroom (No Charging)	13J
Battle Dressing Station	9A
Battle Dressing Storeroom	9F
Berthing	6A
Berth/Chair Storeroom	13J
Biomedical Repair Laboratory	9A
Blasting Cap Magazine	15L

COMPARTMENT NAME	SHEET NO.
Blood Bank	9A
Blowout Trunk	12A
Boat Gear Locker	13J
Boat Handling Motor Control Room	3I
Boatswain Storeroom	13J
Boatswain Workshop	4A
Boiler Shop	4D
Bomb Magazine (Unfused)	15K
Bomb Tail Stowage	15A
Bread Room	8E
Breakwater Pump Room	14C
Breakwater Tank	14B
Bridle Arrester Machinery Room	3I
Brig Lobby	6A
Brig Vestibule	6A
BRIGHTEYE Magazine	15J
Bulk Stores	13J
Bunkroom	6A
Bunting Shop	4A
Burner Cleaning Shop	4E
Butcher Shop	8B
Cabin	6A
Cable Trunk	12A
Camera Maintenance Shop (ASSC) S"O" Shop	17A
Camera Repair & Stowage Area	10B
Canvas Shop	4A
Capstan Machinery Room or Space	3A
Captains Publication Locker	13J
Cargo Bomb Fuse/Primer Detonator Magazine	15K
Cargo Control Center	5A
Cargo Fuel Control Center	5A
Cargo Fuses Magazine	15J
Cargo Hold (conventional ammunition)	15J
Cargo Hold (missiles-except liquid fueled)	15I
Cargo Hold (missiles-liquid fueled)	15O
Cargo Hold (special weapons)	15L
Cargo Trunk	12A
Carpenter Shop	4E
Carrier Air Traffic Control Center	5A
Carrier Air Traffic Control Center (CIC)	5A
Cartridge Actuated Device Magazine	15K
Cartridge Room	15L
Cast Room	9E
Casualty Collection And Assembly Area	9A
Catapult Control Room	14E
Catapult Exhaust and Blowdown Overboard	14G
Catapult Launching Valve Room	14F
Catapult Lube Oil Pump and Tank Space	14H
Catapult Lube Oil Tank, Pump and Valve Room	14H
Catapult Machinery Room	14D
Catapult Piping Space	14F
Catapult Piping Trunk	14G
Catapult Retraction Engine Machinery Room	14D
Catapult Steam Lines (Trunked)	14G
Catapult Steam Receiver Space	14F
Catapult Steam Receiver Tank Space	14F
Catapult Trough Warmup Room	14F
Catapult Trough (CVN 72 and later)	14A2
Catapult Trough (through CVN 71)	14A1
Catapult Warm Up Room	14F
CBU Magazine	15K
Cell	6A
Central Control Station	5A
Central Control Station/D.C. Central	5A
Central Supply and Sterilization Room	9A
Chain Locker	12A
Chain Locker Sump	12A
Chapel	6A

COMPARTMENT NAME	SHEET NO.
Chart Room	5A
Chemical Gun Ammunition Magazine	15L
Chemical Mixing Room (I.O.I.)	17C
Chemical Mixing Room (Photo Lab)	100
Chemical Warfare Defense Equipment Storeroom	13J
Chief Master-At-Arms Storeroom	13J
CHT Pump Room	3H
CIC	5A
CIC Maintenance Area	5A
CIWS Control Room	5A
CIWS Control Room, Workshop and Storeroom	5A
CIWS Local Control and Equipment Room	5A
CIWS Local Control Room	5A
CIWS Magazine	15K
CIWS Storeroom	15A
CIWS Workshop	4A
Classified Waste Disposal Room	12N
Classified Waste Destruction Room	12J
Clean Bag Stowage	13J
Clean Clothes Locker	13J
Clean Parts Storeroom	13J
Cleaning Gear Locker	13J
Clinical Laboratory	9A
Closed Circuit TV Equipment Shop	4A
Clothing and Small Stores Storeroom	13J
CM Rocket Motor Magazine	15J
CO2 Transfer Shop	4P
Cofferdam	12A
Color Processing Room	10B
Combustion Air Intake Space (Uptake)	2B
Combustion Control Repair Shop	4A
Commanding Officer Pantry	8B
Communication On-Line Equipment Room	5A
Communication Technology Control Room	5A
Communications Center	5A
Communications Office	5A
Communications Repair	4A
Communications Room	5A
Communications Storeroom	13D
Compressor and Machinery Room	3F
Computer Center	5A
Computer Central	5A
Computer Room	5A
Conference Room	6A
Conflagration Station	12M
Consultation Room	9A
Contact Printing Room	10B
Contact Room	10B
Contaminated Aviation Lube Oil Tank Space	12A
Conveyer	12A
Cooling Water Supply Equipment Room	3H
Counselors Room	6A
Countermeasure Maintenance Shop (ASSC) S"AM" Shop	17B
CPS Fan Room	12E
Crane Machinery Room (Electric)	3I
Crash and Salvage	13J
Crypto Repair Facility (CRF) Shop	4B
Crypto Repair Facility	4A
Crypto Room	5A
CSER	5A
Cut Film Development Room	10B
CV Intelligence Center	17B
Cycloidal Propellor Room	2F
Damage Control Central	5A
Dark Room	10A
Dark Room (Eye Exam)	9A
Dark Room (Print Shop)	10B
Data Systems Repair	4A

COMPARTMENT NAME	SHEET NO.
Debarcation Control Center	5A
Debriefing Room (CVIC)	17B
Deck Gear Locker	13J
Deck Office (With weather access)	6B
Deflector Machinery Room (Jet Blast)	3D
Degaussing Room	5A
Degaussing Switchboard Room	5F
Demolition Explosive Magazine	15J
Dental Apparatus Room	9B
Dental Ceramic Laboratory	9B
Dental Clinic	9B
Dental Operating Room	9B
Dental Prosthetic Laboratory	9B
Dental Recovery Room	9B
Dental Storeroom	9F
Dental Waiting Area	9B
Detection and Tracking and Weapons Control Room	5A
Detection And Tracking Area (CIC)	5A
Detention Cell	6A
Detonator Locker	15J
Detonator Magazine	15J
Developing Room	10B
Diesel Fire Pump Room	2C
Diet Pantry	9A
Diffuser Room	12E
Director Equipment Room	5A
Director Slip Ring Assembly Rm (Less Director #3)	5A
Director #3 Barbette	5A
Display and Decision and Surface Operations	5A
Display And Decision (CIC)	5A
Diving Gear Locker and Shop	4E
Dome Equipment Room	5A
Drafting Room (CVIC)	17B
Drainage Manifold Room	3K
Dress Ship Lighting Streamer Stowage	13J
Dressing Room	6A
Drone Control Equipment Room	5A
Drone Helicopter Storeroom	13J
Dry Cleaning and Tailor Shop (Air Conditioned)	4J
Dry Cleaning and Tailor Shop (Ventilated)	4I
Dry Cleaning Material Tank	4M
Dry Cleaning Shop (Air Conditioned)	4J
Dry Cleaning Shop (Ventilated)	4I
Dry Cleaning Storeroom	13J
Dry Provision Issue Room	4A
Dry Provisions Storeroom	13I
Drying Room	12B
Dumbwaiter	12A
Dummy Weapon Stowage	15A
Dust Control (I.O.I. Spaces)	17E
Dust Removal Passing Box (I.O.I.)	17E
Dust Trap (ASSC)	17E
ECM Area (CIC)	5A
ECM Equipment Room	5A
ECM Room	5A
Ejection Rack Stowage	13J
Electric Accounting Machine Room	4A
Electric Load Center	5A
Electrical Shop	4A
Electrical Storeroom	13J
Electronic Data Processing (CVIC)	17B
Electronic Data Processing (I.O.I.)	17B
Electronics Calibration Laboratory	4G
Electronics Equipment Room	5A
Electronics Shop	4A
Electronics Shop-Shielded Area	4A
Electronics Storeroom	13J
Electronics Test Equipment Shop	4A

COMPARTMENT NAME	SHEET NO.
Electronics Test Equipment Storeroom	13E
Elevator Machinery Room (Electric)	31
Elevator Machinery Room (Hydraulic-Electric)	3D
Elevator Pit (Not subject to gas spillage)	3A
Elevator Pit (Subject to gas spillage)	11A
Emergency Generator Room	2C
Emergency Ordnance Disposal Team	15H
Emergency Steering Station	3A
Enclosed Operating Stations	2A
Enclosed Walkway	12A
Engine Room	2C
Engine Room Intake	2B
Engine (Jet) Test Stand	12D
Engineering Dept Office & Damage Control Central	5A
Engineering Fuel Test Laboratory	4B
Engineer's File and Publication Room	13D
Engineer's Storeroom	13J
Engraving Room	4E
Enlarging Room	10B
Entertainment Equipment Room	12N
EOO Diving Gear Locker and Shop	4E
EOO Storeroom	13J
Escape Trunk	12A
Evaporator Room	2C
EW Room	5A
Exercise Warhead Stowage	16D
Exploder Stowage & Test Shop	15H
Explosion Ordnance Disposal Work Center	15H
Explosive Section Magazine	15J
Eye, Ear, Nose & Throat Treatment & Aviation Exam	9A
Eye Examination Range	9A
Eye Range Room	9A
Facilities Maintenance Equipment Storeroom	13J
Fan Room	12A
Fathometer Trunk	12A
FBM Checkout Area	16C
FBM Components Storeroom	16B
FBM Elevator Trunk	16D
FBM Launching & Handling Repair Parts Storeroom	16B
FBM Module Checkout Shop	16C
FBM Spare Parts Stowage	16B
FBM Stowage Area	16A
Film Evaluation Room (ASSC)	17A
Film Handling Dark Room (I.O.I.)	17B
Film Loading Room	17A
Film Loading Room (ASSC) S ^{HD} Shop	17A
Film Processing Room	10B
Film Processing Room (I.O.I.)	17B
Film Rewind Room	10A
Film Titler Room (I.O.I.)	17B
Filter Plenum	12A
Fire Bomb Case Stowage	15A
Fire Bomb Solution Storeroom	15E
Fire Control Shop	4A
Fire Pump Room	2C
Fire Room	2C
Flag Bridge	5A
Flag Briefing and Planning	5A
Flag Communication Annex	5A
Flag Display & Decision	5A
Flag EDP	5A
Flag Intelligence Office	5A
Flag Operations & Analysis	5A
Flag Plot	5A
Flammable Liquids Issue Room	13A
Flammable Liquids Storeroom	13A
Flare Handling Room	15Q
Flare Magazine	15J

COMPARTMENT NAME	SHEET NO.
Flex Hose Shop	4A
Flight Control Station	5A
Flight Deck Amplifier Room	5A
Flight Deck Control Annex	5A
Flight Deck Control Station	5A
Flight Deck Control & Aircraft Maint Control Ctr	5A
Flight Deck Crash Crew Shelter	6B
Flight Deck Debarkation Control	5A
Flight Deck Equipment Room	5A
Flight Deck Lighting Control Station	5A
Flight Deck & Aviation Maintenance Control Center	5A
Floodlight Stowage	13J
Fly Control	5A
FM Radio Station	6A
Foam Station	12A
Folding Chair Stowage	13J
Forced Draft Blower Room	2D
Foul Weather Gear Locker	13B
Foundry	4D
Fresh And Salt Water Decontamination Station	7A
Frozen Blood Stowage	9A
Fuel Air Explosive (FAE) Magazine	15Q
Fuel Oil Service Pump Enclosure (Machinery Room)	2D
Fueling At Sea Hose Stowage	13J
Fueling Station Locker	13J
Fuse Magazine	15J
Galley (air conditioned)	8C
Galley (ventilated)	8A
Garbage Disposal Room	8A
Gas Cylinder Locker	13J
Gas Cylinder Storeroom (Flammable)	13A
Gas Cylinder Storeroom (Nonflammable)	13H
Gas Cylinder Storeroom (Oxygen)	13H
Gas Equipment Storeroom	13J
Gas Generator Stowage	13J
Gas Mask Storeroom	13J
Gas Turbine Shop	4C
Gasoline Filter Room	11A
Gasoline Fuel Sta. (not open directly to weather)	11A
Gasoline Pump Motor Room	11B
Gasoline Pump Room	11A
Gasoline Trunk	11A
General Workshop	4A
GFCS Power Room (400 Hertz MG)	3L
Grinding & Tool Work Room	4E
Ground Support Equipment Shop	4C
Group Living Space	6A
Guidance Package Checkout & Repair Shop	16C
Guidance System Alignment Area	16C
Gun Barrel Stowage Trunk	13J
Gun Gear Locker	13J
Gun & Launcher Shop	4B
Gyro Compass Shop	4F
Halon Cylinder Storeroom	13H
Handling Area	12H
Handling Equipment Storeroom	13J
Hangar Bay	12F
Hangar Deck Control	5A
Hangar Deck Gear Locker	13J
Hangar Division Door Machinery Space	31
HCFF Station	12A
Helicopter Control Station	5A
Helicopter Direction Center	5A
Helicopter Hangar	12G
Helicopter Hangar (Enclosed) (except LPH)	12G
Helicopter Shop	4C
Helium Bottle Stowage	13J
Helix House	5C

COMPARTMENT NAME	SHEET NO.
Helo Crash & Rescue Locker	13J
Helo Crash & Salvage Locker	13J
Helo Service Locker	13J
High Explosives Magazine	15L
Hobby Shop	4A
Hull Repair Shop	4A
Hydraulic Package Checkout Area	16C
Hydraulic Power Room (LSD Display)	12M
Hydraulic Repair Shop	4C
Hydraulic Testing Shop (Cleaning Area)	4C
Hydraulic Testing Shop (Test Area)	4F
IC and Gyro Room	5A
IC Switchboard Room	5A
Ice Cream Bar	88
Ice Cream Making Room	8A
ICE Shop Governor & Injector Test Room	4B
IFF Equipment Room	5A
Imagery Interpretation Room (CVIC)	17B
Incinerator Room	12J
Inert Gas Producer Room	3N
Integrated Catapult Control Station	14E
Intelligence Integration Room (CVIC)	17B
Intensive Care Quiet Room	9E
Intensive Care Unit	9E
Intensive Care Unit Bath	9D
Interior Communication Shop	4A
Internal Combustion Engine Shop	4E
Internal Fuel Tank Stowage (Empty)	13J
IRSTD Room	5A
Isolation Quiet Room	9E
Isolation Quiet Room Bath	9D
Issue Rooms	4A
I.O. Office (CVIC)	17B
I.O.I. Power Room	17D
I.O.I. Water Supply Equipment Room	17D
Jet Engine Control Room	12L
Jet Engine Test Facility Filter Area	3I
Jet Engine Test Facility Storeroom	13J
JIC EDP Room	5A
JIC/AVN Photo Laboratory Finishing Room	10B
Joint Intelligence Center	17B
JP-5 Filter Room	3I
JP-5 Fueling Station	3A
JP-5 Pump Room	3H
JP-5 Stowage	13J
Keypunch Room	4A
Ladies Room	7A
Lagging Shop	4A
Landing Craft Equipment Room	12A
Landing Force Equipment Storeroom	13J
Lashing Gear Storeroom	13J
Launcher Control Room	5A
Launcher Gas Generator Stowage Area	16D
Launcher Power Equipment Room	16B
Launcher Tube Closure Stowage	16B
Launcher Tube Diaphragm Stowage	16B
Laundry Issue Room (Air Conditioned)	4J
Laundry Issue Room (Ventilated)	4I
Laundry Receiving Room (Air Conditioned)	4J
Laundry Receiving Room (Ventilated)	4I
Laundry Storeroom	13J
Laundry Water Heater Room	12E
Laundry (Air Conditioned)	4J
Laundry (Ventilated)	4I
Library	6A
Light Lock	12A
Light Trap	12E
Line Handling Space	12A

COMPARTMENT NAME	SHEET NO.
Linen Locker	13J
Lithium Battery Locker	12A
Litter Stowage Locker	13J
Living Space	6A
Load Center Switchboard Room	5A
Locker Room (Personnel)	7B
Locksmiths Shop	4A
Lounge	6A
Lube Oil Filter Shop	4D
Lumber Stowage	13J
Machine Film Processing Room	10B
Machine Shop	4E
Machinery Fan Room	12A
Mail Handling Room	12M
Mailbag Storeroom	13J
Main Machinery Room (diesel and steam powered)	2C
Main Machinery Room (gas turbine powered)	2E
Marine Location Marker Magazine	15J
Marine Press Shop (Air Conditioned)	4J
Marine Press Shop (Ventilated)	4I
Mass Stowage Trunk	13J
Materials Laboratory	4A
Meat Preparation Room or Area	88
Mechanical Calibration Laboratory	4G
Mechanical Instrument Shop	4A
Medical Accounting	9A
Medical Apparatus Room	9G
Medical Consultation Room	9A
Medical Department Bath	9D
Medical Department Office	9A
Medical Locker	9F
Medical Narcotic and Security Storeroom	9A
Medical Property and Accounting Office	9A
Medical Records Office	9A
Medical Storeroom	9F
Medical Treatment Room	9A
Messroom	6A
Metalsmith Shop	4D
Meteorological Room	5A
Meteorological Storeroom	13J
Microfilm Processing Room	10B
Micro-Miniature (2M) Repair Work Center	4R
MIRCS Pressure Calibration Room	4A
MIRCS Standards Room	4G
MIRCS Temperature Room	4G
Missile Checkout Equipment Shop	4A
Missile Checkout Equipment Storeroom	13E
Missile Equipment Storeroom	16B
Missile Handling Equipment Shop	4C
Missile Handling Equipment Storeroom	16D
Missile Launcher Handling Equipment Storeroom	13J
Missile Weapons Control & Switchboard Computer Rm	5A
Mission Planning & Briefing (CVIC)	17B
MK 13 G.M.L.S. (Magazine Inner Structure)	15F
MK 13 G.M.L.S. (Magazine Missile Chamber)	15H
MK 24 Flare Stowage	15J
MK 28 (SUBROC) Component Stowage	15J
MK 28 (SUBROC) Guidance/APU Section Stowage	15J
MK 28 (SUBROC) Motor Magazine	15J
MK 28 (SUBROC) Shop	15B
MK 28 (SUBROC) Warhead Magazine	15J
MK 4 Gun Pod Magazine (ammo installed)	15K
MK 4 Gun Pod Magazine (no ammo installed)	15K
MK 4 Gun Pod Shop	15D
MK 46 Center Section Magazine	15J
MK 46 Engine Cleaning Shop	15G
MK 46 Overhaul Shop	15H
MK 46 Torpedo Magazine	15J

COMPARTMENT NAME	SHEET NO.
MK 46 & EX 11 Shop	15H
MK 46 & EX 11 Torpedo Magazine	15J
MK 48 Component Stowage	15A
MK 48 Ready Service Stowage	15J
MK 48 Shop	15H
MK 56 GFCS Control Room	5A
MK 57 Depth Bomb Stowage	15L
MNS Maintenance and Diving Gear Room	4A
Mobile Equipment Stowage	13J
Modular Stowage & EF Shop (ASSC) S"8" Shop	17B
Mooring Station	12A
Morgue	9A
Motion Picture Film & Rewind Room	10A
Motion Picture Processing Room	10B
Motion Picture Projection Room	10A
Motion Picture Projector Shop	10A
Motor Generator Room	3L
MTACCS, EDP Room	5A
MTACCS Repair	4B
Multisensor Interpretation Room (I.O.I.)	17B
Napalm Stowage	13J
Navigation Equipment Shop	4A
Navigation Equipment Storeroom	16B
Navigator's Storeroom	13J
NIXIE Maintenance Equipment Room	5A
Noise and Vibration Analysis Room	4A
Noise and Vibration Test Room	4A
Nondestructive Test Laboratory	4A
NSSMS Control & Equipment Room	5A
NSSMS Director Equipment Room	5A
NSSMS Equipment Room	5A
NSSMS Launcher Equipment Room	5A
NSSMS Magazine	15K
NSSMS Workshop	4A
NTDS Computer Room	5A
Nursing Center	9A
Office Lobby	6A
Office (Deck)	6A
Office (General)	6A
Office (Shop)	4A
Oil Analysis Laboratory	4A
Oil & Water Test Laboratory	4A
Operating Room	9C
Optical Landing ILARTS TV & Flight Deck Light Ctrl	5A
Optical Landing System Equipment Room	5A
Optical Shop	4F
Oral Hygiene Room	9B
Ordnance Equipment Storeroom	13J
Ordnance Shop	4B
Ordnance Storeroom	13J
Outside Machine Shop	4E
Outside Machine Shop Storeroom	13J
Oxygen-Nitrogen Compressor Room	3C
Oxygen-Nitrogen Fill Room	3C
Oxygen-Nitrogen Producer Room	3C
Oxygen-Nitrogen Refrigeration & Stowage Room	3C
Oxygen-Nitrogen Stowage Room	3C
O.O.D. Station	12A
Paint Mixing and Issue Room	13A
Painting and Refinishing Room	4B
Pantry (air conditioned)	8C
Pantry (ventilated)	8A
Parachute Drying Room	12C
Parachute Storeroom	13C
Passage	12E
Pattern & Foundry Material Storeroom	13J
Periscope Stowage Trunk	13F
PHALANX 20mm Magazine	15K

COMPARTMENT NAME	SHEET NO.
PHALANX Equipment Storeroom	15A
Pharmacy	9A
PHOENIX Magazine	15K
PHOENIX Warhead Magazine	15J
PHOENIX Wing & Fin Stowage	15A
Photo Chemical Mixing Room (CVIC)	17C
Photo Flash Cartridge Magazine	15J
Photo Laboratory	10B
Photographic Dark Room (CVIC)	17B
Photographic Dark Room (Recreational)	10A
Photographic Light Room (CVIC)	17B
Photographic Storeroom and Issue Room	10B
Physical Fitness Room	6A
Physiotherapy Room (Dry)	9E
Physiotherapy Room (Wet)	9E
Pilot House (Enclosed)	5A
Pilot House (Open)	5B
Pipe, Bar, and Plate Stowage	13J
Pipe Shop	4D
Pitometer Log Trunk	12A
PLAT Camera Enclosure	5A
Polaris/Poseiden Operational Readiness Inst (PORI)	16C
Portable Electronic Equipment Storeroom	13J
Positive Transparency Printing Room (I.O.I.)	17B
Post-Op Recovery and Intensive Care Unit	9E
Power Conversion Rooms	3J
Power Supply/Conversion Room	12M
Power Supply/Conversion Rooms	3J
Pressure Lock	12E
Pressurizer Compartment	12E
Preventive Dentistry Room	9B
Print Shop or Room	10B
Print Shop Storeroom	13J
Print Washing and Drying Room	10C
Printed Circuit Board Repair Shop	4A
Propulsion Control Shop And Test Laboratory	4B
Provision Issue Room	4A
Provisions Handling Room	12H
Publication Storeroom	13J
Pump Room Control Room	5A
Pump Room (Except Gas & Diesel Driven Pump Rooms)	3H
Pyrotechnics Locker	15J
Pyrotechnics Magazine	15J
Pyrotechnics Preparation Room	15J
Quiet Room	9E
Quiet Room Bath	9D
Radar Equipment Room	5A
Radar Room	5A
Radar Switchboard Room	5A
Radar Transceiver Room	5A
Radar Transmitter Room	5A
Radio Central	5A
Radio Transmitter Room	5A
Radiographic Darkroom	4A
Radiographic Viewing Room	4A
Rain Clothes Locker	13B
RAST-LSO Control Station	5A
Recompression Chamber	12A
Recompression Room	12N
Recreation Room	6A
Reel Storeroom	13J
Refrigerated Photo Storeroom	13J
Refrigeration Machinery Room	3F
Registered Publications Office	6A
Registered Pubs. (Strongroom, Vault, or Locker)	13D
Repair Parts Stowage	13J
Repair Station (Above Damage Control Deck)	12A
Repair Station (Damage Control Deck & Below)	12K

COMPARTMENT NAME	SHEET NO.
Replenishment Equipment Storeroom	13J
Retail Clothing Store	6A
Re-entry Body Shop & Stowage Area	16A
Re-entry System Component Storerooms	16B
Re-entry System & Missile Component Storeroom	16B
Robe Locker	13J
ROCKEYE II Magazine	15K
Rod Motor Stowage	13J
Rope Stowage	13J
Rubber and Plastic Shop	40
SADEYE Magazine	15A
Saluting Powder Magazine	15J
SAD Reading Room (CVIC)	17B
Scrub Room	90
Scullery	80
Sea Cabin	6A
Seamart	4A
Secondary Communication Repair Shop	4A
Secondary Conning Station	50
Secondary Damage Control Station	5A
Secure Communications	5A
Secure Drug Storeroom	9A
Secure Teletype Room	5A
Security Alert Team Locker	13J
Security Control (I.O.I.)	17B
Security Light Stowage	13J
Security Station	12A
Service Interface Room	12E
Sewage Plant	3H
Sewage Pump Room	3H
Sewage Treatment Room	3H
Shaft Alley	3K
Sheetmetal Shop	40
Shelter (Personnel)	12I
Sheltered Bridge	5A
Shipfitter Shop	40
Ships Aircraft Work Center	6A
Ships Signal Exploitation Space (SSES)	12M
Ships Store	8B
Ships Store Flammable Materials Storeroom	13A
Ships Store Storeroom	13J
Shore Power Station	12E
Shower Space	7A
SHRIKE Uppercase Magazine	15K
SI Reading Room (CVIC)	17B
SIDEWINDER Magazine	15K
SIDEWINDER Nitrogen Launcher Bottle Chrg Sta/Stwg	15M
SIDEWINDER Ready Service	15C
SIDEWINDER Wing & Fin Stowage	15A
Signal Shelter (Enclosed)	5E
Signal Shelter (Open)	5B
Slide Duplication Room	10B
Small Arms Magazine	15J
Smoke Pyrotechnics Magazine	15J
Snack Bar	8B
SHAKEYE Magazine	15K
Soda Fountain	6A
Sonar Control Room	5A
Sonar Cooling Equipment Room	5A
Sonar Dome Access Trunk	12E
Sonar Equipment Room	5A
Sonar Transducer Room	5A
Sonobuoy Ready Service & Bathythermograph Stowage	13J
Sonobuoy Storeroom	13J
SPARROW Magazine	15K
SPARROW Wing & Fin Stowage	15A
Special Clothing Storeroom	13J
Special Weapons Magazine (Incl M-1 thru M-5 Shops)	15N

COMPARTMENT NAME	SHEET NO.
Special Weapons Maintenance Area	15I
Special Weapons Shop	15I
Special Weapons Storeroom	15A
Squadron Flight Suit Room	12L
Squadron Line Shack	12L
Squadron Ready Room	12L
Squadron Work Center	4B
Stack	12E
Stateroom	6A
Steering Gear Power Room	3J
Steering Gear Ram Room	3A
Steering Gear Room	3J
Sterilizing Room	9A
Stern Gate Machinery Room	3I
Storage Battery Shop (Lead Acid)	4L
Storeroom (Crew and Officers-Personal Gear)	13J
Stores Assembly Area (Enclosed)	12H
Stores Handling Equipment Stowage	13J
Stores Landing and Handling Area (Enclosed)	12H
Stowage and Retrieval (I.O.I.)	17B
Study	6A
Submarine Antenna Shop	4B
Submarine Component Storeroom	13J
SUBROC Igniter Magazine	15J
Surface Lookout Station (Enclosed)	5E
Surface Lookout Station (Open)	5B
Surgical Dressing Room	9A
Surgical Dressing Room (on AH, CVA, LHA, LPD, LPH only)	9C
Surgical Pre-Op Holding	9A
Survival Support Device Recharging Shop	4C
Sweep Gear Storeroom	13B
Switchboard Room	5A
SWU Publication Room	12L
S.D. Storeroom	13J
S.D. Storeroom Mobile Equipment (Repair Parts)	13J
S.D. Storeroom (Flammable Gas Cylinders)	13A
S.D. Storeroom (Flammable Liquids)	13A
S.D. Storeroom (Flammable Materials)	13A
Table Leaf Locker	13J
Tactical Air Coordination Center	5A
Tactical Operations Plot	5A
Tail Fin Storeroom	15A
Tailor Shop (Air Conditioned)	4J
Tailor Shop (Ventilated)	4I
Tailor & Dry Cleaning Supply Storeroom	13J
Target Data Card Storeroom	16B
TARTAR Checkout Room	15B
TARTAR Component Storeroom	15B
TARTAR Launcher Control Room	5A
TARTAR Launcher Loading Room	15B
TARTAR Launcher Space	15A
TARTAR Magazine-Missile Chamber	15L
TARTAR Strikedown Room	15B
TARTAR Warhead Magazine	15K
Technical Operations Plot	5A
Teletypewriter Shop	4A
Television Control Room	5A
Television Studio	5A
Test Equipment Shop (Noncritical)	4A
Test Laboratory (Oil, Water, and Gages)	4A
TFCC Remote Equipment Room	5A
Toilet Space	7A
Tool Issue Room	4A
Torpedo Afterbody Overhaul Shop	15G
Torpedo Explosive Component Magazine	15J
Torpedo Room	15J
Training Aids Locker	13J
Training Room	6A

COMPARTMENT NAME	SHEET NO.
Trash Burner Room	12J
Trash Compactor Room	12P
Type I Airlock	12A
Type II Airlock	12A
Type III Airlock	12A
Typewriter Shop	4A
Typewriter Shop Storeroom	13J
UHF Radio Room	5A
Unassigned	12A
Underwater Log Meter Trunk	12A
Underwater Log Trunk	12A
Unit Commander Pantry	8B
Unitized Cargo - Ammunition Cartridge Room	15L
Universal Weapons Magazine (FAE Facility)	15O
Universal Weapons Magazine (Hypergolic)	15O
Universal Weapons Magazine (Ready Service)	15C
UNREP Motor Control Room	3M
UNREP Wire Rope Reel Storeroom	13J
UNREP Workshop	4C
Uptake Space	2B
Utensil Wash Area	8A
Utility Room	9G
Valve Shop	4D
VCHT Room	3H
Vegetable Preparation Room or Area	8B
Vending Machine Area	8B
Vent For Breakwater Tank (WT Trunk)	14H
Vent Space	12E
VERTREP Control Station	5A
Vestibule	12A
Vestibule (CVIC Spaces and ASSC Shops)	17E
Vestibule (I.O.I. and ASSC Shops)	17E
VLS MK 41 Magazine	15P
Void	12A
War Communications Annex	5A
War Room	5A
Ward	9E
Ward Bath	9D
Wardroom	6A
Wardroom Pantry	8B
Wardroom Storeroom	13J
Wash Deck Gear Locker	13J
Washroom	7A
Watch Repair Shop	4A
Watercloset Space	7A
Weapons Coordination Center	5A
Weapons Direction Equipment Room	5A
Weapons Elev Mach Rm & Pit (subj to fuel spillage)	11A
Weapons Elevator Machinery Room	3I
Weapons Fire Control Shop Storeroom	13E
Weapons Special Purpose Portable Test Equip Strm.	13E
Welding Shop	4D
White Phosphorous Projectile Magazine	15J
White Print Room	10C
Winch Control Space	12E
Windlass Machinery Room	3I
Windlass Room	3G
Wiring Trunk	12A
Writing Room	12N
X-Ray Dark Room	9A
X-Ray Room	9A

COMPARTMENT NAME	SHEET NO.
------------------	-----------

(Insert Classif. of TMDER Here and At Bottom of Page) CLASSIFICATION:

NAVSEA (USER) TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER)
(NAVSEA S0005-AA-GYD-030/TMMP & NAVSEAINST 4160.3)

INSTRUCTIONS: Insert classification at top and bottom of page. Read the following before completing this form. Continue on 8½" x 11" paper if additional space is needed.

1. USE THIS REPORT TO INDICATE DEFICIENCIES, USER REMARKS, AND RECOMMENDATIONS RELATING TO PUBLICATION.
2. BLOCKS MARKED WITH "*" ARE TO BE FILLED IN BY THE CONTRACTOR BEFORE PRINTING.
3. FOR UNCLASSIFIED TMDER'S, FILL IN YOUR RETURN ADDRESS IN SPACE PROVIDED ON THE BACK, FOLD AND TAPE WHERE INDICATED, AND MAIL. (SEE OPNAVINST 5510.1 FOR MAILING CLASSIFIED TMDER'S.)

1. NAVSEA NO. *		2. VOL. PART *	3. TITLE *	
4. REV. DATE OR TM CH. DATE	5. SYSTEM/EQUIPMENT	6. IDENTIFICATION/NOMENCLATURE (MK/MOD/AN)		
7. USER'S EVALUATION OF MANUAL (Check Appropriate blocks)				
A. EXCEL- LENT	B. GOOD	C. FAIR	D. POOR	E. COM- PLETE

8. GENERAL COMMENTS

9. RECOMMENDED CHANGES TO PUBLICATION					
PAGE NO A.	PARA- GRAPH B.	LINE NO. C.	FIG. NO. D.	TABLE E.	F. RECOMMENDED CHANGES AND REASONS

10. ORIGINATOR AND WORK CENTER (PRINT)	11. ORIGINATOR'S RANK, RATE OR GRADE, AND TITLE	12. DATE SIGNED
13. SIGNATURE OF WORK CENTER HEAD	14. SIGNATURE OF DEPARTMENT OFFICER	15. AUTOVON/COMM NO.

16. SHIP HULL NO. AND/OR STATION ADDRESS (DO NOT ABBREVIATE)

17. THIS SPACE ONLY FOR NSDSA				
A. CONTROL NO	B. COG ISEA	C. DATE	D. PRIORITY	E. TRANSMITTED TO
		<div style="display: flex; justify-content: space-between;"> <div>RECEIVED</div> <div>FORWARDED</div> <div>DUE</div> </div>		

NAVSEA 9086/10 (REV. 6-85) S/N 0116-LF-090-8651
(REPLACES 4-84 EDITION & NAVSEA 4160/1
DESTROY STOCK)

CLASSIFICATION:

PLEASE CLOSE WITH TAPE - DO NOT STAPLE - THANK YOU

Fold Here

DEPARTMENT OF THE NAVY



Official Business
Penalty for Private Use \$300

**COMMANDING OFFICER
NAVAL SHIP WEAPON SYSTEMS ENGINEERING STATION
NAVAL SEA DATA SUPPORT ACTIVITY (Code 5H00)
PORT HUENEME, CA 93043-5007**

Fold Here

(Insert Classif. of TMDER Here and At Bottom of Page) CLASSIFICATION:

NAVSEA (USER) TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER)
(NAVSEA S0005-AA-GYD-030/TMMP & NAVSEAINST 4160.3)

INSTRUCTIONS: Insert classification at top and bottom of page. Read the following before completing this form. Continue on 8½" x 11" paper if additional space is needed.

1. USE THIS REPORT TO INDICATE DEFICIENCIES, USER REMARKS, AND RECOMMENDATIONS RELATING TO PUBLICATION.
2. BLOCKS MARKED WITH "*" ARE TO BE FILLED IN BY THE CONTRACTOR BEFORE PRINTING.
3. FOR UNCLASSIFIED TMDER'S, FILL IN YOUR RETURN ADDRESS IN SPACE PROVIDED ON THE BACK, FOLD AND TAPE WHERE INDICATED, AND MAIL. (SEE OPNAVINST 5510.1 FOR MAILING CLASSIFIED TMDER'S.)

1. NAVSEA NO. *

2. VOL.
PART *

3. TITLE *

4. REV. DATE OR TM CH.
DATE

5. SYSTEM/EQUIPMENT

6. IDENTIFICATION/NOMENCLATURE (MK/MOD/ANI)

7. USER'S EVALUATION OF MANUAL (Check Appropriate blocks)

A. EXCEL-
LENT

B. GOOD

C. FAIR

D. POOR

E. COM-
PLETE

F. INCOM-
PLETE

8. GENERAL COMMENTS

9. RECOMMENDED CHANGES TO PUBLICATION

PAGE NO A.	PARA- GRAPH B.	LINE NO. C.	FIG. NO. D.	TABLE E.	F. RECOMMENDED CHANGES AND REASONS
------------------	----------------------	-------------------	-------------------	-------------	------------------------------------

10. ORIGINATOR AND WORK CENTER (PRINT)

11. ORIGINATOR'S RANK, RATE OR GRADE, AND TITLE

12. DATE SIGNED

13. SIGNATURE OF WORK CENTER HEAD

14. SIGNATURE OF DEPARTMENT OFFICER

15. AUTOVON/COMM
NO.

16. SHIP HULL NO. AND/OR STATION ADDRESS (DO NOT ABBREVIATE)

17. THIS SPACE ONLY FOR NSDSA

A. CONTROL NO

B. COG ISEA

C. DATE

D. PRIORITY

E. TRANSMITTED TO

RECEIVED

FORWARDED

DUE

PLEASE CLOSE WITH TAPE — DO NOT STAPLE — THANK YOU

Fold Here

DEPARTMENT OF THE NAVY



Official Business
Penalty for Private Use \$300

COMMANDING OFFICER
NAVAL SHIP WEAPON SYSTEMS ENGINEERING STATION
NAVAL SEA DATA SUPPORT ACTIVITY (Code 5H00)
PORT HUENEME, CA 93043-5007

Fold Here

(Insert Classif. of TMDER Here and At Bottom of Page) **CLASSIFICATION:**

NAVSEA (USER) TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER)
(NAVSEA S0005-AA-GYD-030/TMMP & NAVSEAINST 4160.3)

INSTRUCTIONS: Insert classification at top and bottom of page. Read the following before completing this form. Continue on 8 1/2" x 11" paper if additional space is needed.

1. USE THIS REPORT TO INDICATE DEFICIENCIES, USER REMARKS, AND RECOMMENDATIONS RELATING TO PUBLICATION.
2. BLOCKS MARKED WITH "*" ARE TO BE FILLED IN BY THE CONTRACTOR BEFORE PRINTING.
3. FOR UNCLASSIFIED TMDER'S, FILL IN YOUR RETURN ADDRESS IN SPACE PROVIDED ON THE BACK. FOLD AND TAPE WHERE INDICATED. AND MAIL. (SEE OPNAVINST 5510.1 FOR MAILING CLASSIFIED TMDER'S.)

1. NAVSEA NO. *	2. VOL. PART *	3. TITLE *
-----------------	----------------	------------

4. REV. DATE OR TM CH. DATE	5. SYSTEM/EQUIPMENT	6. IDENTIFICATION/NOMENCLATURE (MK/MOD/ANI)
-----------------------------	---------------------	---

7. USER'S EVALUATION OF MANUAL (Check Appropriate blocks)

A. EXCEL- LENT	B. GOOD	C. FAIR	D. POOR	E. COM- PLETE	F. INCOM- PLETE
-------------------	---------	---------	---------	------------------	--------------------

8. GENERAL COMMENTS

9. RECOMMENDED CHANGES TO PUBLICATION

PAGE NO A.	PARA- GRAPH B.	LINE NO. C.	FIG. NO. D.	TABLE E.	F. RECOMMENDED CHANGES AND REASONS

10. ORIGINATOR AND WORK CENTER (PRINT)	11. ORIGINATOR'S RANK, RATE OR GRADE, AND TITLE	12. DATE SIGNED
13. SIGNATURE OF WORK CENTER HEAD	14. SIGNATURE OF DEPARTMENT OFFICER	15. AUTOVON/COMM NO.

16. SHIP HULL NO. AND/OR STATION ADDRESS (DO NOT ABBREVIATE)

17. THIS SPACE ONLY FOR NSDSA

A. CONTROL NO	B. COG ISEA	C. DATE	D. PRIORITY	E. TRANSMITTED TO			
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33.3%;">RECEIVED</td> <td style="width: 33.3%;">FORWARDED</td> <td style="width: 33.3%;">DUE</td> </tr> </table>	RECEIVED	FORWARDED	DUE		
RECEIVED	FORWARDED	DUE					

NAVSEA 9086/10 (REV. 6-85) S/N 0115-LF-090-8651
(REPLACES 4-84 EDITION & NAVSEA 4160/1
DESTROY STOCK)

CLASSIFICATION:

PLEASE CLOSE WITH TAPE -- DO NOT STAPLE -- THANK YOU

Fold Here

DEPARTMENT OF THE NAVY



Official Business
Penalty for Private Use \$300

**COMMANDING OFFICER
NAVAL SHIP WEAPON SYSTEMS ENGINEERING STATION
NAVAL SEA DATA SUPPORT ACTIVITY (Code 5H00)
PORT HUENEME, CA 93043-5007**

Fold Here